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An analysis of the personal need systems of obese college freshmen

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AN ANALYSIS OF THE PERSONAL NEED SYSTEMS OF OBESE COLLEGE FRESHMEN

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by

Lila L. Annaloro

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APPROVAL SHEET

We the undersigned do certify that we have read this dissertation and that in our individual opinions it is acceptable in both scope and quality as a dissertation for the degree of Doctor of Education.

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Dedication

This dissertation is dedicated to my parents, William and Lillian Annaloro. The value they placed on education and helping others instilled in me the motivation to acquire this degree and to dedicate my life in service to others.

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AN ANALYSIS OF THE PERSONAL NEED SYSTEMS OF OBESE COLLEGE FRESHMEN

Chapter I

Introduction

Justification for Study

Obesity is a major health problem in the United States. It is estimated that 33 million Americans are obese (National Institute of Health, [NIH], 1985). Heart disease, arthritis, diabetes and stroke are some of the many diseases which have been linked to obesity.

Weight gain will occur when an overall intake of energy (calories) has exceeded the total output of energy (calories burned). Obesity is the excess accumulation of body fat attained through this energy imbalance (NIH, 1985).

The etiology of obesity is unclear. Biologists, physicians, sociologists, anthropologists and psychologists have all attempted to isolate the cause within their respective fields. For many years, the study of obesity was the domain of medical scientists and researchers. They attempted to explain obesity in relation to somatic factors. Endocrine disturbances, neurological lesions, metabolic factors, and heredity have all been viewed as possible determinants (Kaplan & Kaplan, 1957).

Psychologists became interested in obesity research when it became apparent that somatic factors could only account for 3% of known cases of obesity (Kaplan & Kaplan,

1957). Psychological research has looked at psychosocial factors, familial patterns, psychopathology, personality characteristics, populations and treatment. A number of psychological studies have made reference to the unconscious and conscious motives behind the eating behavior of the obese (Castelnuovo-Tedesco & Schiebel, 1975; Singh & Sikes, 1974; Ondercin, 1984). Kaplan and Kaplan (1957) in a landmark review of the psychosomatic literature on obesity reported on possible motives for overeating. For example, overeating may be: a means of decreasing anxiety, tension, or depression; a way to reduce frustration and deprivation; a means of expressing hostility; a type of defiance against authority and control; a means of avoiding competition in life; a means of exhibition; and a way to avoid personal relationships. Although a great number of studies refer to conscious or unconscious motives affecting obesity, few studies have attempted to measure these motivation factors in relation to Murray's need system.

The condition of obesity has proved to be most resistant to treatment (Brownell, 1982). Stunkard (1974) in a review of the treatment literature summarized that: 1) most people do not seek treatment for obesity, and of those who do, most do not remain in treatment (attrition rates of as high as 80% have been reported for out-patient treatment); 2) Most of those who remain in treatment will

not lose much weight, and of those who lose weight most will regain it.

Within the last few years, the behavioral treatment of obesity has been recognized as a successful treatment for this condition. Early research results were promising for short-term weight loss maintenance. However, recent longitudinal studies on long-term weight loss maintenance indicate that behavioral treatment is no more successful than other treatment modalities (Jeffrey & Coates, 1978).

Some of the reasons for the failure of various treatment programs include: lack of development of individualized treatment plans based on client characteristics; lack of accurate assessment of motivational factors for overeating and for losing weight; unrealistic diet expectations and goals (100% diet adherence) which discourage clients; lack of support from family and friends; and weight loss specialists who are insensitive to the needs of their clients (Franzini & Grimes, 1981).

If the treatment of obesity is to be more successful, weight loss specialists will need to know the motivating factors behind overeating behavior. This study seeks to provide more knowledge about motivating factors affecting overeating behavior.

On college campuses it has been reported that eating

disorders are occurring in increasing proportions (Ondercin, 1984). The two disorders which have drawn the most attention from clinicians and researchers are anorexia nervosa and bulimia. Obesity has not received the same amount of recent attention, but Bruch (1981) believes that anorexia nervosa, bulimia, and obesity are similar, in that all three disorders involve the misuse of the eating function to solve problems of living.

College students with eating disorders are seeking counseling at college counseling centers (Chambers, personal communication, December, 1985). Insight into motivation factors could assist clinicians in the treatment of obesity and disorders associated with being underweight. This study has looked at the organization of personal needs from a systems perspective in an attempt to clarify the possible motives for overeating behavior.

Statement of the Problem

How do the Murray-based personal need systems of obese college students differ from those of normal and underweight college students?

Theoretical Rationale

The theoretical framework for this study is the application of General Systems Theory to certain aspects of

the motivation system (Chambers, 1981).

General Systems Theory is a theory of science that developed in reaction to the limits of the reductionist method. The reductionist method studies the interplay of elementary units independently from each other. The primary author of General Systems Theory, Ludwig Von Bertalanffy, defines systems theory as the study of elements standing in interaction. Wholeness, dynamic interaction, and organization are its main principles (Gray, Nicholas, & Rizzo, 1969).

One major classification of systems is the living system (e. g. an amoeba, a person)(Chambers, 1981). Living systems are open systems. Open systems develop states of higher order, differentiation, and organization as they mature. Development proceeds from a lack of differentiation to a state of increasing differentiation and hierarchical order. Implicit in the hierarchical structure is the concept that a system at any given level controls the performance of subsystems directly below it (Milsum, 1972). Subsystems are parts or elements which make up the system and are at a level below the general system or the suprasystem in the hierarchical order of systems (Miller, 1965). For example, personality is a subsystem of a living system, and a motivation or need system is a subsystem of a personality system.

Henry Murray developed a Personal Need System based on some principles from General Systems Theory. The Murray need system is a comprehensive classification of motives (Chambers, 1980). Murray (1938) defines a need as a:

> construct (a convenient fiction or hypothetical concept) which stands for a force...in the brain region, a force which organizes perception, apperception, intellection, conation and action in such a way as to transform in a certain direction an existing, unsatisfying situation. A need is sometimes provoked directly by internal processes of a certain kind...but more freguently (when in a state of readiness) by the occurrence of one of a few commonly effective press (environmental forces)...Thus it manifests itself by leading the organism to search for or to avoid encountering or, when encountered, to attend and respond to certain kinds of press... Each need is characteristically accompanied by a particular feeling or emotion and tends to use certain modes...to further its trend. It may be weak or intense, momentary or enduring. But usually it persists and gives rise to a certain kind of overt behavior (or fantasy), which...changes the intiating circumstances in such a way as to bring about an end situation which stills (appeases or satisfies) the organism. (pp. 123-124)

From this definition it can be assumed that needs in Murray's system can be either internally aroused or set into action as a result of external stimulation. The need produces activity on the part of an organism, which continues until it is satisfied or another need becomes dominant. There is a hierarchy of needs, and needs represent the significant determinants of behavior within the person. Needs form critical points of interaction

between behavior and other personal variables and systems. When a need is aroused the individual is in a state of tension. Satisfaction of the need involves reduction of the tension (Shneidman, 1981). Murray (1938) states that the existance of a need can be inferred on the basis of:

> 1) the effect or end result of the behavior, 2) the particular pattern or mode of behavior involved, 3) the selective attention and response to a particular class of stimulus objects, 4) the expression of a particular emotion or affect, and 5) the expression of satisfaction when a particular effect is achieved or disappointment when the affect is not achieved. (p. 124).

Need concepts from Murray's system are used in the test instrument (Picture Identification Test) employed for this study. The need concepts are measured by a subject's response to a particular class of stimulus objects (facial photographs).

Picture Identification Test theory is based on assumptions from General System's Theory applied to Murray's need concepts (Chambers, 1981).

From a systems perspective, Chambers (1981) defines personality "by the ways the major subsystems of the person function and interact and by the dominant set or organizing principle which integrates and directs the actions of the subsystems" (p. 7). An individual's personality is revealed by the actions they use to meet their needs.

The motivation system is one of the major subsystems of

the personality. Other major subsystems are the perceptual, cognitive, affective, and behavioral (Gold, 1985). According to Gold (1985) "the motivation system is the one which releases and activates the energy needed to facilitate action. This action, from a motivational perspective, represents an attempt to meet a need or complex of needs" (p. 2). Chambers (1980) explained that, "the organizing principle for a motivation system is the aim to maximize satisfaction and minimize dissatisfaction for all needs" (p. 391). Needs are the elements of the motivation system.

Needs in a motivation system can be organized in different ways to provide subsystems for different types of situations. For example, needs can be structured to serve combative purposes in one situation, and rearranged to serve friendly purposes in another, and competitive strivings in yet another. The ability of a system to rearrange needs to meet different situations makes the system flexible and adaptable (Chambers, 1981).

Eating behavior is normally motivated by biological needs. Overeating behavior by obese people may be an attempt to satisfy a psychological need or complex of such needs, which would best be served by other behaviors. In other words, overeators have not learned to differentiate and organize their needs in ways which will maximize satisfaction of all their needs. Results from the Picture

Identification Test for the obese subjects were analyzed in relation to how the obese organize their needs in a system and how the organization of their needs influence their behavior.

Definition of Terms

Anorexia Nervosa-An eating disorder categorized as a weight loss of at least 25% of original body weight, an intense fear of being obese, disturbance of body image, and a refusal to maintain a normal body weight for age and height.

Bulimia-An eating disorder with recurrent episodes of binge eating which is usually terminated by self-induced vomiting.

Dimension Confusion-A test measure in the Picture Identification Test (PIT) that indicates that two out of the three independent dimensions of the PIT (Combative, Personal and Competitive) have become mixed. Confusion of the dimensions limits a person's flexibility and effectiveness in finding alternative ways to meet their needs.

Dysphoric-An unpleasant mood such as depression, anxiety, or irritability.

External cue sensitivity-A theory of obesity that states that the obese are more sensitive to external stimuli than to internal physiological stimuli.

Gastric stapling surgery-A surgical procedure whereby a double row of staples are implanted at the top of the

stomach so that only a small amount of food can enter the stomach, thereby reducing the amount of food that can be eaten at one time.

Ileal-jejunoileal bypass surgery-A surgical procedure that short-cuts most of the small intestine, producing a malabsorption state, leading to substantial and permanent weight loss.

Motivation system-The system which releases and activates the energy needed to facilitate action to meet a need or complex of needs.

Need (Motive)-Movers of action that aim to increase satisfaction and decrease dissatisfaction.

Obesity-An excess accumulation of fat deposits located throughout the body.

Personal Need System-A classification system of needs developed by Henry Murray.

Problem Score-A test measure in the Picture Identification Test (PIT) which indicates how well each need fits in the overall pattern of a person's motivation system. High Problem Scores indicate the possibility of conflicts and frustrations related to that need.

Research Hypotheses

1. The obese groups will show significantly higher Problem Scores than the normal weight and underweight control groups

on the following sets of needs:

a. The Ego needs of Dominance, Autonomy, and Sex. b. The Avoidance needs of Harm Avoidance, Blame Avoidance, Inferiority Avoidance, and Deference. c. The Exhibition need. d. The Gratitude need.

2. A significantly greater confusion of the Personal and Combative Dimensions will be observed for the obese groups than for those from the normal weight and underweight control groups.

3. The Competitive Dimension Weight and Attitude Dimension Correlation will be significantly lower for the obese groups than for the normal weight and underweight control groups.

4. The Personal Dimension Attitude Correlation and/or Weight will be significantly different for the obese groups than for the normal weight and underweight control groups.

5. A significantly higher Combative Dimension Weight will result for the obese groups than for the normal weight and underweight control groups.

Sample and Data Gathering Procedures

The Picture Identification Test (PIT) (1980) was mailed to 1169 freshmen at the College of William and Mary who enrolled for the fall semester of 1984, and to 1249 freshmen who enrolled for the fall semester of 1985. William and Mary students are predominately from middle and upper-middle

class socioeconomic backgrounds, are academically "able" and 70% are from Virginia. The taking of the test was optional. Exactly 576 students from the 1984 freshmen class, and 505 students from the 1985 freshmen class completed the test.

Nursing personnel at the College Health Center were asked to supply the heights and weights of each student who took the Picture Identification Test. The height and weight measurements were taken from the student's physical exams that were sent to the college as a requirement for enrollment. Students were classified as obese, normal weight or underweight according to criteria set by the Metropolitan Life Insurance Company, 1983 weight tables.

From the 1984 data, 27 males and 25 females were classified as obese; 45 males and 49 females were classified as normal weight; and 38 males and 74 females were classified as underweight. From the 1985 data, 23 males and 18 females were classified as obese; 59 males and 45 females were classified as normal weight; and 23 males and 51 females were classified as underweight.

Group scores were compared on all PIT variables by t-test analyses. The 1984 data was cross-validated against the 1985 to reduce the possibility of chance significant results.

From the significant mean and/or variance differences for PIT measures which discriminate ($p<.05$) between the

obese and non-obese groups of the 1984 and 1985 entering freshmen, weight scales for underweight, normal weight and overweight prediction were developed. The scales were derived from the cross-validated freshmen data and were tested for discriminant function on the combined 1984 and 1985 freshmen data.

Limitations

This study has certain limitations. The first limitation is the measurement of obesity. In this study obesity is defined as 15% over the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables. This definition of obesity was adapted after experts at the 1985 National Institute of Health Conference on the Health Impications of Obesity agreed that the 20% above the average weight by height (standard definition of obesity) was not a stringent enough measure for obesity (Burton, Foster, Hirsch, & Van Itallie, 1985). Although a more stringent measure of obesity will be used in this study (15%), the percentage was still based on the Metropolitan Life Insurance Company weight tables. The Metropolitan Life Insurance Company weight tables do not measure percentage of body fat. Percentage of body fat is a more objective measure of obesity. Some subjects in this study categorized as obese according to the statistical definition, may fall

into this weight category because of a high degree of muscle weight, not body fat (e.g. athletes).

The second limitation of this study is the response rate from the test administration. The Picture Identification Test (PIT) was mailed out to 1169 incoming freshmen for the fall semester of 1984, and to 1249 incoming freshmen for the fall semester of 1985. The number of freshmen who completed and returned the PIT from the 1984 administration was 576, and 505 freshmen from the 1985 administration completed and returned the PIT. The lack of 100% return rate may produce a biased sample. Those who returned the test may have been more motivated, more compliant, more psychological-minded, or more or less able to satisfy their needs. To account for this limitation the students who did not respond were sampled on height and weight. This was done to insure that the heights and weights of the students who did respond were representative of the whole population. There was a significant difference ($p<.05$) on the variable height between males who returned the PIT and males who did not return the PIT, and for females who returned the PIT and females who did not return the PIT. Although there was a significant difference on the height variable for both sexes, the difference in actual inches was minimal. For the male subjects the difference between the respondents and non-respondents was .72 of an

inch. For the female subjects the difference between the respondents and non-respondents was .48 of an inch.

There were no significant differences between any of the groups on the variable weight. The nonsignificant differences between the respondents and non-respondents on the variable weight reduces the probability of a biased sample. However this study is still limited in that other variables could account for differences between respondents and non-respondents.

The third limitation of this study is the limited population from which the sample was drawn. The PIT results used in this study were collected from freshmen at the College of William and Mary. William and Mary students are predominantly from middle and upper-middle class socioeconomic backgrounds, are academically "able" and 70% are from Virginia. The limited demographic sample makes it difficult to generalize the results of this study to a more heterogeneous population.

Ethical Considerations

The Picture Identification Test (PIT) was mailed to the 1984 and 1985 freshmen classes at the College of William and Mary as part of a research project on motives and academic adjustment. Students were informed that their results would not become part of any academic record and that all results

would be confidential. They were also informed that only general statistical results would ever be published. This researcher did not have access to the names of the respondents. All data were coded by a five digit number.

The PIT data was collected by the Center for Psychological Services at the College of William and Mary by permission of the Dean of Students and the Provost.

Chapter II

Review of Literature

Summary of Rationale and Relationship to Problem

The conference findings from the National Institute of Health Consensus Development Conference on the Health Implications of Obesity implicates obesity as a major health problem in the United States, estimating that 33 million Americans are obese. The evidence from the scientific literature recognizes genetic predisposition, metabolism rate, eating behavior, cultural context and psychological development as just a few of the causes of obesity (Burton et al., 1985).

The psychological research into the causes of obesity has looked into psychosocial factors, familial patterns, psychopathology, personality characteristics, populations and treatments. A number of studies have made reference to the conscious and unconscious motives behind the eating behavior of the obese (Castelnuovo-Tedesco & Schiebel, 1975; Singh & Sikes, 1974; Ondercin, 1984). Although a number of studies refer to conscious or unconscious motives affecting obesity, few studies have attempted to measure these motivation factors.

The condition of obesity has proved to be resistant to treatment (Brownell, 1982). Most people do not seek

treatment, and of those who do most are unsuccessful in losing weight (Stunkard, 1974). An understanding of the motivating factors behind overeating behavior could help weight loss specialists in the treatment of obesity.

Eating disorders (anorexia nervosa, bulimia, and obesity) have been reported as occurring in increasing proportions among college students (Ondercin, 1984). Insight into motivating factors could assist clinicians in the treatment of obesity and disorders associated with being underweight. This study will look at the organization of personal needs from a systems perspective in an attempt to gain a better understanding of possible motives for eating behavior. Specifically, this study will compare the Murray-based personal need systems of obese college students with the need systems of normal and underweight college students.

The theoretical framework for this study is a theory of motivation based on principles from General Systems Theory. General Systems Theory is the study of elements standing in interaction (Gray, et al., 1969). Needs are the elements of the motivation system.

According to Gold (1985) "the motivation system is the one which releases and activates the energy needed to facilitate action. This action, from a motivational perspective, represents an attempt to meet a need or complex

of needs" (p. 2). The function or organizing principle of a motivation system is the aim to maximize satisfaction and minimize dissatisfaction for all needs (Chambers, 1980).

The rationale for studying the need systems of the obese, in contrast to measuring needs as traits, is that a systems approach studies the interaction of needs in a dynamic system. This approach can give a picture of how needs interact to influence behavior. This is advantageous if overeators could learn to differentiate and organize their needs in ways which will maximize satisfaction of all their needs. The organization and satisfaction of their needs could be instrumental in the successful treatment of their obesity.

Summary of Relevant Research

Personality and Obesity

Historically, the psychological study of obesity grew out of the work of individual clinicians in practice.

Hilde Bruch (1947), was one of the first clinicians to present a developmental theory of obesity. Her studies of families with obese children described the father's role as subordinate and the mother's role as dominant. Mothers of obese children live out their own problems and frustrations in their children. These mothers do not let their children develop a sense of independence or personal achievement. In

trying to realize their own dreams of a life of luxury, they prevent their children from doing things for themselves. Over-feeding is an expression of affection and over-protectiveness. However, underlying this expression of affection are feelings of hostility. Hostility which is related to the demands of excessive care of another human being. Yet, these mothers want to keep their children dependent and do so by offering food as a bribe. This cycle of inactivity and over-eating distorts personality maturation. Therefore, obese individuals fail to develop a sense of security, competence or a sense of self-worth. They feel helpless, they are in the world without a protecting mother. This leads to constant anxiety, and the defense against this anxiety is to eat. Consequently, food becomes a source of comfort in times of emotional distress. The personality characteristics of obese adults are a consequence of this mal-development in maturation. Characteristics include emotional immaturity, passive-dependence and the inablity to tolerate frustration or to postpone satisfaction.

Clinicians who have supported Bruch's developmental theory have provided additional descriptors of the obese personality. In his clinical work with obese adults, Richardson (1946) described obesity as a protection from the expression of sexuality and development of interpersonal

relationships. He also saw obesity as an expression of strength symbolized by large size to compensate for feelings of weakness and helplessness. Thus, eating becomes a substitute gratification for feelings of frustration and a way to satisfy other need states. Conrad (1952) explains that the primary aim of over-eating behavior is to reduce tension. Secondary gains include a way to avoid sexual relationships, an expression of hostility, a symbol of love, security and satisfaciton, a shield against life's problems. Layers of fat offer a feeling of strength, security and protection; are a way to gratify exhibitionistic tendencies; and are a means of getting attention, and a fulfillment of dependency needs.

A competing psychological theory of obesity is psychoanalytical theory. Psychoanalytical theory describes obesity as a regression to the oral stage of development. Schick (1947) summarized the Freudian view, "as an unconscious desire to again experience the satisfaction derived as a infant from the intake of food" (p. 175). Freud pointed out that originally sexual excitement depended on stimulation of the mouth. Therefore a regression to an oral level may imply a need to satisfy a sexual desire (Schick, 1947). Regression occurs when an individual is unable to function adequately as an adult and overeats as a substitute for adult gratifications. Oral dependence

represents the personality characteristics of dependence, immaturity, passivity and helplessness (Schick, 1947; Rascovsky, de Rascovsky & Schlossberg, 1950; Burdon & Paul, 1951; Conrad, 1954; & Hecht, 1955).

A problem with the early research in support of the psychological theories of obesity are that they are all case studies from individual analysts. In all of the cases, the individuals had presented themselves for therapy because of some psychological distress. It becomes difficult to generalize these findings to obese individuals who do not seek treatment. Other methodological problems include researcher bias and lack of controlled experimentation. The strength of these studies is in the information that is provided by in-depth interviews.

Empirical research into the psychological study of obesity began to emerge in the late 1950's. In a study to assess whether obese people are emotionally unstable, Young, Berresford and Moore (1957) administered the Thurston Personality Schedule, the Bell Adjustment Inventory, and the Bernreuter Personality Inventory to 10 obese college women. The authors reported that some subjects were reasonably well-adjusted and others had minor or major psychiatric problems. It is difficult to assess these findings because of a lack of a control group and because the authors did not supply a summary of the statistics.

Masling and Rabie (1967) attempted to measure oral dependence in an obese population. Subjects were 20 obese men and women seeking treatment for obesity and 18 normal weight men and women matched as a control group. The subjects were tested on the Rorschach, four cards of the Thematic Apperception Test (TAT) and a level of aspiration task. The obese group gave significantly more oral-dependent responses than the control group on the Rorschach and TAT. However, the tests were given during the diet when the obese subjects were orally deprived. This could account for the increase in oral responses. Also, the test administrators were not blind to the the purpose of the study. In another study attempting to measure the psychoanalytical theory of obesity, Keith and Vanderburg (1974) gave 35 obese women and a control group of 35 normal weight women the Dynamic Personality Inventory. The instrument is supposed to measure orality. No significant statistical differences were found between the two groups, but other researchers have questioned these results because of the conflicting validity data on the instrument.

The Minnesota Multiphasic Personality Inventory (MMPI) has been a test instrument that has frequently been used to assess personality characteristics of the obese. Atkinson and Ringuette (1967) administered the MMPI to 21 obese men and women who were at least 100% overweight. Seven of the

patients were part of a long-term weight reduction program, the other fourteen were not treated. The MMPI profiles were judged independently by three clinical psychologists, who knew the patients were obese but did not know their psychological histories. There was no distinctive personality profile, but a significant degree of psychopathology existed. The raters classified 62% of the subjects as having depressive disorders and 76% as having personality disorders. In comparison to these results Castelnuovo-Tedesco and Schiebel (1975) found that none of the subjects in their study had serious psychiatric problems but did show a common personality trait of passive-aggressiveness. Twelve obese women were studied psychiatrically for three years in conjuntion with their treatment of obesity by ileo-jejunoileal bypass surgery. The MMPI was administered pre-operatively and the average profile indicated that the subjects were superficially extraverted and impulsive, with passive-aggressive personality traits.

Leon, Kolotkin and Korgeski (1979) compared groups of subjects with substance abuse problems (obesity, smoking, and anorexia) against a normal control group on the MacAndrew Scale (MAC) of the MMPI. The MAC scale measures degree of addiction proneness. The obese group compared with the smokers, anorectic and normal control group showed

no significant elevation on the MAC scale. The full MMPI profile for the obese group did show a tendency toward depression and impulsivity.

A group of 70 pre-operative ileo-jujunoileal bypass patients were compared against a group of 32 psychiatric patients on the MMPI, to assess comparative levels of psychopathology. As a group, the obese patients had significantly lower elevations on seven of the clinical scales in comparison to the psychiatric group. Within-group profiles indicated that the obese had mild personality disorders which could be interpreted as personality traits of emotional immaturity (Webb, Phares, Abram, Meixel, Scott & Gerdes, 1976).

A variety of other instruments have been used to assess personality characteristics of the obese. In a study looking at psychological differentiation or field dependence in obese women, Karp and Pardes (1965) found that the obese group was significantly less differentiated than the normal weight control group. Thirty-four female volunteers attending a nutrition clinic for treatment of obesity and 34 normal weight women were given three tests of perceptual field dependence. The rod-and-frame test (RFT), the body adjustment test (BAT) and the short form of the embedded figures test (EFT). Level of psychological differentiation is a dimension of personality structure, which has been

found to distinguish various pathological symptom groups.

An attempt was made to delineate a psychological profile of super-obese patients seeking ileal bypass surgery. Wise and Fernandez (1979) administered the SCL-90, a symptom distress inventory to 24 super-obese patients seeking surgery, 454 psychiatric outpatients and 174 people seeking behavior modification treatment for obesity. The bypass patients were significantly less dysphoric then the psychiatric outpatients. In comparison with the behavioral weight loss group the bypass patients were significantly less depressed and showed fewer obsessive compulsive tendencies. The bypass group was also significantly less distressed in respect to total symptom endorsement. These findings question the hypothesis that the massively obese are seriously emotionally ill. In a more recent study of personality features of obese bypass patients, Ryden and Danielsson (1983), gave the Meta-Contrast Technique (MCT), the Spiral After-Effect Test (SAE), the Rod-and-Frame Test (RFT), the Aalto Picture Test and the Self-Perception Test (SPT) to 20 obese surgical patients. The results from the obese group were compared against other clinical groups and normal controls. The obese subjects showed significantly more signs of immaturity, childish defenses, anxiety and inhibited or inappropriate aggressiveness. On measures of field dependency, they lacked a firm stable sense of self,

which correlates with an external locus of control.

The research on the personality profiles of obese individuals does not delineate a distinct psychological profile. However, the research has pointed to personality characteristics which may be common to obese individuals. These characteristics include emotional and sexual immaturity, passive-aggressiveness, dependence, low frustration tolerance, impulsivity, interpersonal dissatisfaction, dominance, aggressiveness, exhibitionism, and identity confusion (Richardson, 1946; Bruch, 1947; Schick, 1947; Rascovsky et al., 1950; Burdon & Paul, 1951; Conrad, 1952, 1954; Hecht, 1955; Castelnuovo-Tedesco & Schiebel, 1975; & Leon et al., 1979).

Contradictory findings exist as to the degree of personality disturbance among the obese. Some of the research contends that the personalities of the obese are no more pathological than the general population and are as diverse as the general population (Young et al., 1957; Keith & Vanderburg, 1974; & Wise & Fernandez, 1979). Other research contends that the obese are more psychologically disturbed than the general population (Karp & Pardes, 1965; Masling & Rabie, 1967; Atkinson & Ringuette, 1967; & Ryden & Danielsson, 1983).

It is difficult to determine which position is more correct because of the diversity in the types of research

and in the quality of research. Some of the research is based on case study, some on empirical findings. The researcher bias inherent in the case studies and the lack of adequately controlled experimentation in some of the empirical research, has affected the quality of the research and any conclusions drawn from that research.

Perception and Obesity

The research on the perceptual experiences of obese people developed from Bruch's (1964) clinical observations that the obese are not physiologically aware of hunger. She believed that their inability to discriminate between physiological hunger and other states of arousal developed from childhood feeding schedules that were random and not dependent on states of hunger.

Stunkard and Koch (1964) conducted a study to measure the correlation between gastric motility and reports of hunger by obese and normal weight men and women. Gastric motility occurs when an empty stomach contracts. The clinical conception of hunger occurs primarily during contractions of the empty stomach. In this study gastric motility was measured by a gastric balloon inserted into the stomach. Non-obese women showed a significant correlation of pressure of gastric motility and hunger. Obese women reported hunger infrequently, even in the presense of

gastric motility. Non-obese men showed a random association on these variables and obese men reported hunger frequently, even in the absense of gastric motility. The authors' conclusions were that faulty perception of visceral cues play a part in the impaired regulation of food intake of some obese people. This conclusion came under attack because of the method of measurement. A gasric balloon increases motility in the fasting state and therefore is an artifact of an intragastric balloon (Pennick, Smith, & Wieneke, 1963).

In order to reassess the results of the first study, Stunkard and Fox (1971) conducted a series of studies using more reliable measures of gastric motility. Gastric and duodenal motility were inferred from pressure changes of catheters, inserted in the stomach and duodenum. Utilizing these measures the authors found that obese subjects did not differ from normal weight subjects in their association of gastric motility and hunger.

The conclusions from Bruch's (1961) clinical studies and the inconsistent outcomes of the physiological research inspired Schacter (1968) and his associates to conduct a series of studies. Their research hypothesized that the eating behavior of the obese is for the most part under external control and unrelated to internal states of hunger. Schacter, Goldman and Gordon (1968) conducted a study to

assess whether the obese eat more under conditions of food deprivation and fear. The subjects in this study were obese and normal weight male college students. The true purpose of this study was concealed by the experimenters. Subjects were told the experiment was conducted to test the effect of tactile stimulation on taste. Subjects were instructed not to eat the meal preceding the experimental appointment. In manipulating food deprivation, a group of obese and a group of normal weight subjects were instructed to eat as many roast beef sandwiches as they wanted before filling out a food preference questionnaire. The corresponding groups were not fed before filling out the questionnaire. Following the eating period, the subjects were set before bowls of crackers and told to judge each cracker on certain taste variables. Subjects were instructed to eat as many crackers as they wanted in making their determinations. Before allowing the subjects to eat the crackers, the subjects were divided into low fear and high fear experimental conditons. Low fear subjects were told they would feel a mild tingling sensation from shocks and the high fear subjects were told that the shocks would be painful. It is important to note that fear inhibits gastric motility. Normal subjects ate more crackers when food deprived than when their stomachs were full, and ate more when they were calm than when frightened. The experimental

manipulations had no effect on the amounts eaten by the obese. Because the experimental manipulations had no effect on the amounts eaten by the obese, Schacter et al. (1968) concluded that internal physiological cues are irrelevant to the eating behavior of the obese, and that external food-relevant cues trigger eating by the obese.

In a related study, Nisbett (1968) assessed whether the eating behavior of obese, normal weight and underweight subjects differed in relation to the taste of food and food deprivation. The results from the underweight and overweight subjects upheld the hypothesis that the obese are more responsive to external cues than internal visceral cues, and the underweight are more responsive to internal cues than external cues. The normal weight subjects did not have intermediary sensitivity to both cues, but were more like the obese. Methodological problems with these two studies were that they were carried out in non-naturalistic settings. An abundance of other variables could be interacting with eating behavior which cannot be assessed in these settings. Also, experimenter bias may have played a part in assessment of behavioral measures.

The research into obesity and external cue sensitivity has been extended to research into external sensitivity to cues other than food. Sensitivity to affective stimuli has been hypothesized to be an indication that the obese are

more sensitive to external emotional cues than normal weight individuals. In two experiments, Pliner, Meyer and Blankstein (1974) measured the response of obese and normal subjects to emotional stimuli. In the first study male high school and college students were exposed to slides that had a negative, neutral or positive emotional theme, and asked to rate the slides from a scale of adjectives. The obese subjects rated the positive slides more positively and the negative slides more negatively than normals; thus confirming the hypothesis that the obese respond more strongly to affective stimuli. In the second study, male and female hospitilized children of normal and obese weight were measured on their response to a negative stimuli (insertion of a needle) and a positive stimuli (comforting by nurse after injection). Children with diagnoses affecting body weight were not included in the study. The reaction to the negative stimuli was measured by questionnaire and reaction to the positive stimuli was measured by the time it took a child to stop crying after comforting. Nurses who measured the responses were blind to the purpose of the study. The hypothesis that the obese children would respond more strongly to the negative stimuli was not confirmed, but the obese children did respond significantly sooner to the positive emotional stimulus. The authors discuss this discrepancy in relation to the

conflicting literature on the emotionality of the obese.

It has been hypothesized that obese individuals are more compliant than normal weight individuals. Rodin and Slochower (1974) conducted a study to test this hypothesis. Normal weight and obese subjects were taught three letter words and nonsense syllables by overweight or normal weight experiment confederates. Confederates were not aware of the purpose of the study. Learning took place under conditions of low and high distraction. Confederate behavior during the learning sequence was either nice, neutral or nasty. This variable was introduced to test whether obese and normal weight subjects would react differently to a later request by the confederates. Results indicate that the obese subjects were significantly better learners when learning concrete nouns under conditions of no distraction. The obese showed the poorest learning with nonsense syllables under conditions of high distraction. These findings upheld the hypothesis that the obese are more affected and responsive to salient external cues. Overall, the obese were not significantly more compliant than normal weight subjects but were significantly more responsive to both the weight and the behavior of the confederate than were normals. The obese complied more to a normal weight confederate than to one who was overweight. They were also significantly more compliant to a nice confederate than to a

nasty confederate. The findings from this study on compliant behavior raise the question whether the obese are responding more to external stimuli or whether they are complying because they see themselves as different than normal weight individuals. The results suggest that compliant behavior is a response on the part of the obese to fulfill a need to be accepted and not rejected by people they see as less deviant than themselves (Freedman & Dobb, 1968).

Elman, Schroeder and Schwartz (1977) attempted to test Schacter's (1968) externality hypothesis against Freedman and Dobbs's (1968) concept of deviancy. The concept of deviancy states that a deviant will comply with a non-deviant if the non-deviant has a characteristic that the deviant values. For this particular study, the authors were attempting to assess whether obese subjects (deviants) would be more compliant with a request in the presence of normal weight subjects (non-deviants).

The procedure for this study consisted of a normal weight or an obese subject seated in a study room with either a normal weight or obese experiment confederate. Subjects were always seated behind confederates. Subjects and confederates were not aware of the purpose of the study. Both the subjects and the confederates were told that the purpose of this study was to measure distraction on studying

efficiency.

After completion of a test quiz which was part of the dummy experiment, the experimenter asked the subjects and confederates if they would volunteer for another study. Half of the subjects were assigned at random to a mere-presence condition, where the experimenter asked first the subject, then the confederate, if they would volunteer for another study. The subjects were told that they would receive no credit for volunteering in this future study. The remainder of the subjects were assigned to the modeled-compliance condition. In this condition the confederate was always asked first if they wanted to participate in a future study and the confederate always volunteered. In the modeled-compliance condition, obese subjects with normal weight confederates volunteered for significantly more hours than obese subjects with obese confederates and for significantly more hours than normal subjects with normal confederates. In the mere-presence condition there were no significant findings. The authors interpret the results as supporting the deviancy hypothesis, in that obese subjects (deviants) were influenced by the compliance of normal weight confederates (non-deviants).

Younger and Pliner (1976) looked at obese-normal weight differences in the self-monitoring of expressive behavior. The Self-monitoring of Expressive Behavior Scale (SM) is a

paper and pencil test that monitors self-presentation, expressive behavior and non-verbal affective display. The test was administered to high school and college students of normal and obese weight. The results showed that the obese monitor their expressive behavior to a significantly greater extent than normals. The results of this study can be looked at in light of the externality hypothesis or the alternative explanation that the obese are ingratiating in social situations because they perceive themselves as deviant. This study was conducted with a self-report instrument and the results must be judged in relation to the subjective nature of self-report instruments.

The research outcomes on external cue sensitivity support the theory that the obese respond more to external food cues than to internal states of hunger (Schacter et al., 1968; & Nisbett, 1968). The extension of the theory of external cue sensitivity to cues other than food reveal that the obese in comparison to normal weight subjects are more sensitive to both positive and negative affective stimuli; are poor learners under conditions of distraction; monitor their expressive behavior to a significantly greater degree; and are more responsive and compliant to others' behaviors and requests (Pliner et al., 1974; Rodin & Slochhower, 1974; Younger & Pliner, 1976; & Elman et al., 1977).

An interesting result from the research on compliant behavior of the obese is that the obese are more compliant to a request from normal weight individuals than from obese individuals. This result has been discussed not only in relation to the theory of external cue sensitivity but also in relation to the concept of deviancy (Freedman & Dobb, 1968). The concept of deviancy states that a obese individual (deviant) will be more compliant to a request from a normal weight individual (non-deviant) than from another obese individual (deviant). It is difficult to determine which hypothesis is more correct, but no matter which hypothesis is supported, the research supports the idea that the obese are more compliant than normal weight individuals (Elman et al., 1977).

The findings of the research on obesity and perception must be assessed in relation to the methodological strengths and weaknesses of the research. For the most part, research methodology was sound. Researchers attempted to control outside variables that might interact with the experiment variables, and control groups were included in the research. One possible weakness of the research was that it was conducted in non-naturalistic settings which affect the generalizability of the research to naturalistic settings. A second weakness that may have affected the outcome results was experimenter bias in assessment of behavioral measures.

Reaction to Weight Loss

Hilde Bruch (1952) in her clinical studies of obese individuals hypothesized that weight represents a symbolic symptom. It symbolizes the yearning for greatness, to be special or dominant over others. These needs grow out of a sense of ineffectiveness in achieving non-realistic goals. This striving for non-realistic goals is traced back to developmental issues of trying to compensate for unfulfilled parental ambitions. Consequently, Bruch believes that obese individuals never live up to what they feel they are expected to do. Overeating is the means to relieving dissatisfaction for unfulfilled potential. The increase in body size fulfills the symbolic desire to be big or special.

Removal of the symptom by losing weight may precipitate a psychological disturbance. Reducing may represent a loss of special power. In support of her hypothesis Bruch (1973) detailed case histories of obese individuals who became psychotic during weight loss regimens.

Clinical and empirical research have attempted to document whether obese individuals are motivated to remain overweight to prevent emotional dysfunction.

Stunkard (1957) interviewed a group of obese patients referred to an obesity clinic because of the severity of their obesity and another group of obese patients who were referred to a nutrition clinic. In the first group, 9 out

of 25 patients experienced severe emotional disorders during weight loss. In the second group 54% reported emotional symptoms of anxiety and depression during previous weight loss. Clinical interviews revealed that weight loss involved dynamics of power and control, dependence and freedom. The results of this study must be questioned because the first group of patients were referred to the clinic because of psychiatric problems and the second group of patient's reactions were assessed by self-report. Also the interviewers were not blind to the reason for the study.

In a study assessing anxiety and depression in relation to weight loss, Shipman and Plesset (1963) concluded that successful dieting lowered anxiety and depression. They administered a paper and pencil questionnaire the anxiety-depression scale (ADS) to 81 patients seeing a private physician for weight loss and 51 patients at a nutrition clinic. The authors reported a small but significant correlation between successful dieting and a decrease in anxiety and depression. However, 74% of the subjects had dropped out of the study before its completion, and were not assessed as to reasons for termination.

In a review of the literature on dieting and depression, Stunkard (1974) concluded that there is a high incidence of symptoms of emotional illness in outpatients treated for obesity; that prolonged inpatient treatment has

the same result; that people with childhood onset obesity are more at risk for emotional disturbance; and that outpatient treatment may be more stressful than inpatient treatment. He emphasized, however, that research on the emotional consequences of dieting has been beset by contradictory findings. He cites the reason as methodological differences and problems. The differences and problems include different patient populations on different diet regimens; outpatient treatment versus inpatient treatment; comparing patients with a history of psychiatric problems to patients without such a history; and the lack of comparable control groups.

The advent of ileal-jejunoileal bypass surgery for the super-obese has made it possible to study the psychological effects of large amounts of weight loss. Solow, Silberfarb and Swift (1974) looked at the psychological consequences of weight loss following intestinal bypass surgery. Twenty-nine massively obese patients were assessed pre- and six months post-operatively by psychiatric interview and the following self-administered questionnaires: Jacobs Ego Strength Scale, Shipman's Association Depression Scale, Zung's Self-Rating Depression Scale, Rosenberg's Self-Esteem Scale, Secord's Body Cathexis Questionnaire and the Draw a Person Test. Follow-up interviews were conducted 26 to 46 months after surgery for all patients. Information from

psychiatric interviews and the questionnaires revealed that two-thirds of these subjects were restricted in their physical and social activity, had low self-esteem, had strong fears of exposure, compulsions to please others, difficulty with self-assertion, severe distortion of body image, self-consciousness about appearance and vocational impairment. Seventeen patients were considered reasonably well-adjusted and 12 patients presented different degrees of psychological maladjustment.

Post-operatively and on follow-up most patients reported an increase in physical and social activity, self-esteem, a decrease in depression and anxiety, more satisfactory interpersonal and sexual relations, and gains in vocational effectiveness. Six patients experienced psychiatric illness post-operatively. The authors attribute the illness to pre-existing psychiatric disorder. However, by follow-up, all the patients were said to be better off psychiatrically than they were before the operation.

Examination of the questionnaire scores revealed significant improvement in the Shipman Depression, Rosenberg Self-Esteem and Secord Body Cathexis scales. No significant changes were apparent in the other questionnaires.

The impression of positive change was greater in the interview data. The authors conclude that the difference between the interview data and the questionnaires may have

occurred because pre-operative questionnaire scores may have been distorted in the direction of normality. They base this assumption on the fact that pre-operative obese subjects admitted to having covered-up their sense of hopelessness when filling out the questionnaires. This discrepancy highlights the problems of validity associated with self-report questionnaires. Despite methodological difficulties with this study a pattern emerges of improved psychological health after weight loss. The results of this study pose the question as to whether a disturbance in psychological functioning is related to weight loss or to oral deprivation. Bypass patients are not deprived of food, but people on diets are.

In two separate, but similiar studies the MMPI, the Tennessee Self-Concept Scale, the Internal-External Locus of Control Scale, and the Marlowe-Crowne Social Desirability Scale were administered pre- and post-operatively to patients seeking intestinal bypass surgery.

In the first study, 20 female patients were tested pre-operatively, and one year after surgery. Pre-operatively five scales on the MMPI were elevated: Depression (D), Hysteria (Hy), Psycopathic Deviate (Pd), Schizophrenia (Sc) and Hypomania (Ma). One year after surgery only the scales Psychopathic Deviate (Pd) and Hypomania (Ma) were significantly elevated.

In the second study, three different groups of patients were tested: 43 pre-operative patients, 29 patients tested one year after surgery, and 25 patients tested two years after surgery. Pre-operative patients had significantly elevated scores on all MMPI scales except Hypochondriasis (Hs) and Masculinity-Femininity (Mf). Patients tested one year after surgery had significantly elevated scores on scales of Hysteria (Hy), Psychopathic Deviate (Pd), Paranoia (Pa), and Hypomania (Ma). Patients tested two years after surgery had significantly elevated scores on only one scale, Hypomania (Ma). The results suggest that post-operative bypass patients do not have a deterioration of psychological functioning but instead have improved psychological health (Wampler, Lauer, Lantz, Wampler, Evans, & Madura, 1980).

Behavioral weight loss programs have also challenged the assumption that weight loss will lead to psychological dysfunction. In a review of the literature on behavioral weight loss programs, Wing, Epstein, Marcus and Kupper (1984) found that significant positive mood changes were observed in six out of ten studies. The four remaining studies found no change in mood between, before, and after weight loss. It is difficult to compare the results of each study because of the different diet regimens, behavioral weight loss procedures and the varying differences in the subjects. However, the significantly improved mood changes

observed in patients in six of the studies and no changes in mood in patients in the remaining four studies support the belief that no significant psychological deterioration occurs after weight loss.

Prior to any empirical research on reaction to weight loss, Hilde Bruch (1952) maintained that the obese were motivated to maintain their large size in order to fulfill a need to be special or dominant. Symbolically, weight loss meant the loss of being special. According to her theory, weight loss would lead to psychological dysfunction.

The empirical research on psychological reaction to weight loss supports and contradicts Bruch's theory. Some of the research supports the idea that weight loss among the obese leads to depression or psychological dysfunction (Stunkard, 1957, 1974) and other studies maintain that there is no change and even an improvement in psychological health with weight loss (Shipman & Plesset, 1963 & Wing et al., 1984). Methodological differences and problems, such as different patient populations, diet regimens, treatment modalities and the lack of controlled experimentation has made it difficult to sort out which position is most correct. The most recent research on ileal-jejunoileal bypass patients shows that the psychological health of these patients improves after weight loss. Bypass patients are not deprived of food, as people on diets are. These

findings are discussed in relation to whether oral deprivation, not weight loss, is the primary factor in psychological disturbance (Solow et al., 1974; & Wampler et al., 1980). More research with bypass patients will most likely clarify whether weight loss leads to psychological dysfunction.

Male-Female Differences

The psychological study of obesity has predominately been conducted with women. The basic reason is that women seek out treatment more often then men and therefore are more available subjects for research. When studies have compared males with females, the small number of male subjects has put the results of the research into question.

Wunderlich (1974) compared personality characteristics of 23 male and female individuals in a weight reduction program for super-obese (100% overweight) against a normative group. Results from the California Psychological Inventory (CPI) found that obese women had significantly higher scores on the scales of dominance and psychological-mindedness. Males did not score higher on any scale. Obese females scored significantly lower than the normative group on the scales of Responsibility, Socialization, Communality, and Femininity. Males scored lower on 9 out of the 11 predicted scales. The authors interpret these results as

indicating that there is no common personality profile among the super-obese.

In a study comparing the MMPI profiles of 20 male and 20 female patients in a weight reduction program, Pomerantz, Greenberg and Blackburn (1977) found a significant result on the masculinity-femininity (Mf) scale. The masculinity-femininity scale for the women ranked lowest of all ten clinical scales. This scale score (Mf) was significantly lower than 98% of the population. This is an indication of high femininity interest patterns. The men scored relatively high on the (Mf) scale. The polar ranking of male versus female (Mf) scores could mean that both groups are passive and non-assertive.

The MMPI was administered to 135 morbidly obese patients (100% overweight) prior to gastric stapling surgery. Group profiles indicated a significant degree of psychopathology. Both males and females had a slight elevation on the Psychopathic deviate (Pd) scale, indicating problems with impulse control and conformity. Male profiles showed more personality traits of impulsivity. Female profiles suggested a higher level of unexpressed hostility, with more passive-aggressive personality traits (Hutzler, Keen, Molinari & Carey, 1981).

Because most obesity research has been done on women, Mendelson, Weinberg and Stunkard (1961) conducted two

separate studies on the psychology of obese men. In the first study 25 men were given a medical and psychiatric exam and the following psychological tests: California Psychological Inventory (CPI), Taylor Anxiety Scale (TAS), Leary Adjective Check List, Rorschach Test, Thematic Apperception Test (TAT), Draw a Figure Test and the Wechsler-Bellevue Adult Intelligence Test (WAIS). From the analysis of the psychiatric interview and the psychological tests, the authors concluded that no common personality type was found to distinguish obese men from normal weight men. In the second study the same psychological tests were administered to 18 obese men and 18 normal weight men. The results from the second study also found no common personality type among obese men, but found a difference in self-concept and body image among "juvenile onset obese" subjects and "adult onset obese" subjects. "Juvenile onset obese" subjects had a more derogatory self-concept and body image than "adult onset obese" subjects.

The limited amount of research on obese men has made it difficult to compare the personality profiles of obese men and women. When the two sexes are compared, no single personality profile emerges.

A summary of the research on obese women differs on whether these women are psychologically healthy or psychopathological. The personalities of obese women have

been characterized as dominant, passive, non-assertive, impulsive and passive-aggressive (Wunderlich, 1974; Greenberg & Blackburn, 1977; & Hutzler et al., 1981). Obese men also fall along the continuim of being psychologically healthy to psychopathological, with personality characteristics of passivity, non-assertiveness and impulsivity (Mendelson et al., 1961; Greenberg & Blackburn, 1977; & Hutzler et al., 1981). Further research on comparing obese men and women needs to be done to clarify whether there are personality differences between the two sexes.

College Students

The research on the psychological study of obesity has been done on many different populations. A question that arises is whether results from adult populations can be generalized to college students and vice versa. Freedman (1959) administered the Cattell Anxiety Scale, the Guilford-Zimmerman Temperament Survey, the Gorden Personal Profile; Blacky Test (Cards I and II) and the Thematic Apperception Test (TAT) (Cards 6GF and 7GF) to 78 underweight, normal weight and overweight college students. The results indicated that the underweight group was significantly more submissive. The overweight group and the underweight group were significantly more hypersensitive

than the normal weight group. The author questions the results because the interrator reliabilities were lower than desirable.

The majority of research related to the testing of Schacter's (1968) externality theory has been conducted on college students. The overall results of that research are that the obese are more sensitive to external stimuli than are normal weight individuals. Glass, Lavin, Hanchy, Gordon, Mayhew and Donohoe (1967) extended the theory to test whether obese college students were more persuasible than underweight and normal weight college students. Subjects were given a modified version of a persuasibility procedure. The procedure involved persuasive communications of opposing positions on different topics. Subjects were measured on whether they changed their positions after reading the persuasive arguments. The overweight and underweight subjects were significantly more persuasible than normal weight subjects.

A study was conducted by Young and Reeve (1980) to assess whether personality characteristics and body image perception could distinguish groups high or low in body fat. The authors measured female college students on the Body-Cathexis Scale and the 16 Personality Factor Questionnaire. Discriminant analysis revealed that one personality factor and six body image items distinguished

the group high in body fat from the group low in body fat. The females high in body fat can be characterized as more venturesome than females low in body fat. Ruderman (1983) examined the relation between level of anxiety (relaxation, low and high) and food consumption in obese and normal weight college students. Anxiety was measured by the Subjective Units of Disturbance Scale (SUDS), the Speilberger State Trait Anxiety Inventory (STAI) and electrodes measuring heart rate. Food consumption was measured by the amount of ice cream eaten after introduction of high, low or relaxed experimental conditions. The author was attempting to measure whether the level of anxiety and food consumption among the obese existed in a curvilinear relationship. His findings were that the obese ate significantly less after a low anxiety situation then a high anxiety situation, while their consumption when relaxed was at an intermediate level. Anxiety did not significantly influence the amount eaten by normal weight people.

The research comparing obese, normal weight, and underweight college students shows differences among the three groups. Obese and underweight students have been shown to be more hypersensitive and persuasible (Freedman, 1959; & Glass et al., 1967). When comparing normal weight students to obese students, the obese students were more venturesome and ate more under conditions of high anxiety

(Young & Reeve, 1980; & Ruderman, 1983). One study stated that underweight students were more submissive than overweight and normal weight college students (Freedman, 1959).

There is no research comparing obese adults to obese college students, therefore it is difficult to generalize the research findings from one group to the other. The research findings from this study are discussed in relation to the research findings summarized in the literature review of this study for both obese college students and obese adults.

Motivation from a Needs Perspective

The study of obesity from a needs perspective has been sparse. Suczek (1957) administered ten specially selected cards from the Thematic Apperception Test (TAT) to 100 obese women who were participating in a weight reduction program. The primary variable distinguishing the obese group from other diagnostic groups was the emphasis on strength or dominance in their interpersonal relationships.

The Edwards Personal Preference Schedule (EPPS) was given to eight males and eight females (100%) overweight in an inpatient weight reduction program. Adult normative samples were used for comparison of the EPPS scores. The obese subjects scored significantly higher on the

Heterosexuality and Aggression scales and lower on the Endurance scale. The authors relate the high score on the Heterosexuality scale to the inability of the obese to directly express heterosexual desires. The obstruction of heterosexual needs, leads to a higher and more intense rating on heterosexual test items. The significant finding of low endurance is consistent with earlier research claims that the obese are unwilling to expend energy and have a preference for sedentary activities and a passive inactive life. This result is also correlated with a low Achievement need. The finding of high aggression is also consistent with earlier research findings by Bruch (1964) that the obese will react to unexpected demands with hostility; Gluksman, Hirsch, McCully, Barron, and Knittle (1968) will become hostile to the demands of reduced caloric intake; and Kotkov (1953) use eating as a substitute for overt aggression. The authors claim that aggression is a salient personality characteristic of the obese (Wunderlich & Johnson, 1973). In a comparable study using the (EPPS), Scott (1981) found that overweight women had a higher need for deference. Deference refers to conformity and following the leadership of others.

Ondercin (1984) administered the Picture Identification Test (PIT) to anorectic, bulimic and obese college women at the college of William and Mary. The PIT is a

semi-projective personality test which measures Murray-based needs within a motivational system. For the obese group, the needs of Dominance and Exhibition were significantly more centralized in the motivation system. Centralized needs occur more frequently and in a greater variety of situations than other needs and are more closely associated with other needs. Close association of needs may affect their appropriate expression. For instance when the need of Dominance is more centralized it may lead to overly assertive behavior in an indirect or manipulative way. The centralization of the Exhibition need suggests a need for attention. Also the need for dominance and exhibition can be related to prior research that hypothesizes that the large size of the obese gives them a feeling of power and strength. Peripheral needs are isolated from the motivation system and are expressed in extreme or ineffective ways. The peripheral placement of the Gratitude need suggests that obese subjects are less likely to be grateful to others. This may arise from being over-indulged and finding it hard to meet other people's needs.

The instrument in Ondercin's (1984) study is the same instrument that the author used in this study. However, the two studies differ in that the subjects in this study were not selected from a clinic population. The sample groups were more representative of the normal college population.

Sample size was much larger and the results were cross-validated on two sets of data.

The two most widely used test instruments that measure Murray's need system are the Thematic Apperception Test (TAT) and the Edwards Personal Preference Schedule (EPPS). Both of these instruments measure needs as personality traits. The combined research results of this review on motivation from a needs perspective indicate that the needs of Dominance, Aggression and Deference predominate as personality characteristics of the obese, and that the needs of Sex, Endurance and Achievement are not adequately satisfied by the obese (Suczek, 1957; Wunderlich & Johnson, 1973; & Scott, 1981).

A test instrument that measures needs in a system and not as isolated traits is the Picture Identification Test (PIT). Ondercin (1984) administered the PIT to anorectic, bulimic, and obese college women. Her study identified the needs of Dominance, Exhibition, and Gratitude as being three needs that may predominate in an obese individual's personality or be used in ineffective ways.

The advantage of a test that measures needs in a system over a test that measures needs as traits is that a systems assessment can show how each need affects each of the other needs in that system. This is why I have chosen the PIT over the TAT and EPPS as my instrument of measurement.

Summary of Research and Relationship to Problem

There has been extensive research on the psychological study of obesity. From this research some consistent trends and generalizations can be made. Some personality researchers have claimed that there is a definitive psychological profile of the obese individual. They have described the obese personality as passive-aggressive, immature, dependent, sexually and interpersonally inhibited, etc.(Atkinson and Ringuette, 1967; Castelnuovo and Schiebel, 1975; Leon et al; and Ryden and Danielsson, 1983). Other personality researchers dispute these findings and claim that the personalities of the obese are as diverse as in the general population (Young et al, 1957; Keith and Vanderburg, 1974; and Wise and Fernandez, 1979). It becomes difficult to sort out who is most correct because of the nature of the research. Overall, the methodological procedures have been lacking in quality. Theoretical frameworks were drawn from research based mostly on case studies (Bruch, 1947; Schick, 1947; & Conrad, 1952). The empirical research has been plagued by comparisons of obese subjects who vary greatly by weight and on other variables. Experimenter bias has not been adequately controlled, and a good number of studies lack control groups (Atkinson and Ringuette, 1967; Castelnuovo-Tedesco and Schiebel, 1975).

The conclusions drawn from the personality research

could be applied to the research on the reaction of the obese to weight loss (Stunkard, 1957; Solow et al, 1974; and Wing et al, 1984). Conflicting findings due to methodological differences and problems, and different patient populations on different diet regimens have made it difficult to assess whether the obese are motivated to eat to prevent psychological dysfunction.

Research in external cue sensitivity has looked more promising. There seems to be a general consensus that the obese are more responsive to external stimuli than internal physiological stimuli and that these responses differ from most people of normal weight (Schacter et al, 1968; and Nisbett, 1968). Although most of the research has taken place in the laboratory, which may effect generalization to more naturalistic settings, methodological procedures for the most part have been sound. The extension of this theory to behavior other than eating behavior has implications for defining some personality characteristics of the obese. Sensitivity to social cues may affect the way the obese interact with other people. Research on social cue sensitivity has claimed that the obese are likely to be more compliant than normal weight people, and are affected more by others than from self (Pliner et al, 1974; and Rodin and Slochower, 1974). Some researchers have argued that this behavior is not due to sensitivity to social cues but to a

belief on the part of the obese that they are deviant. They feel that they must behave in a way that complies with the demands of normal weight, non-deviant people (Elman et al, 1977; and Younger and Pliner, 1976).

This author believes that the obese perceive themselves as deviants and that these perceptions make them especially deferent to the demands of normal weight people in their efforts to avoid harm or blame from these "superior" people. Their perceptions of being deviant also motivate the obese to become sensitive to social cues and external stimuli from their environment.

The results of the research on the male-female obese personality indicates that there are personality differences between the sexes. (Wunderlich, 1974; and Hutzler et al, 1981). Prior research has been plagued by a inadequate sampling of men. This study has a comparable number of male subjects, and hopefully will clarify the question of whether personality differences exist between obese men and women.

The Thematic Apperception Test (TAT) and the Edwards Personal Preference Schedule (EPPS) have been the two most common instruments used in the measurement of obesity from a needs perspective. These two instruments measure Murray-based needs as personality traits. Common traits that have appeared from prior obesity research are the needs for Dominance, Exhibition, Deference, Achievement and Sex

(Suczek, 1957; Wunderlich and Johnson, 1973; and Scott, 1981). Neither instrument is able to measure the interaction of needs in a dynamic system. The Picture Identification Test, which is a semi-projective personality test measures the association between Murray-based needs in a motivational system. The difference between instruments that measure needs as traits (Thematic Apperception Test and the Edwards Personal Preference Schedule) and the Picture Identification Test (PIT) is that the PIT is measuring the dynamic interaction of needs. The TAT and EPPS measure needs as static traits. Ondercin (1984) used the Picture Identification Test (PIT) to measure the association of needs among anorectic, bulimic and obese college women. The results of her study are interesting, but not generalizable to a non-clinic population.

With eating disorders becoming more prevalent, a more comprehensive study of psychological motives for overeating behavior was needed. Prior research has made reference to motives for eating behavior, but most research has not directly attempted to measure these motives. A systems approach will study the interaction of needs in a dynamic system and will be able to give a clearer picture of the dynamics involved in overeating behavior. Significant results may be instrumental in the future treatment of obesity.

Chapter III

Methodology

Population and Sample

All sample group data were collected from freshmen entering the College of William and Mary in the fall semesters of 1984 and 1985. William and Mary students are predominantly from middle and upper-middle class socioeconomic backgrounds, are academically "able" and 70% are from Virginia.

Of the 1169 freshmen who were enrolled for the fall of 1984, 576 completed the Picture Identification Test. In the freshmen class of 1985, 505 of 1249 students completed the Picture Identification Test.

Examination of the 1984 data resulted in the identification of 27 male and 25 female freshmen whose weight could be classified as obese. A review of the 1985 data resulted in the identification of 23 male and 18 female freshmen whose weight could be classified as obese. To be selected for the obese group a student's weight must have been at least 15% above the average for their height as measured by the 1983 Metropolitan Life Insurance Company weight tables. This criterion was determined after reviewing the findings from the National Institute of Health Conference on the Health Implications of Obesity. Experts

in the field of obesity came to a concensus that the 20% over the ideal weight by height criterion was undesirable because of increased health risks. They recommended that a more stringent criterion for defining obesity be established (Burton, Foster, Hirsch & Van Itallie, 1985). The 15% criterion was chosen because it has been a standard measure of obesity in other research involving college students (Schachter & Gross, 1968; Nisbett, 1968; Pliner, 1973; & McArthur, Solomom, & Jaffe, 1980).

The normal weight sample groups consist of 45 males and 49 females from the 1984 data, and 59 males and 45 females from the 1985 data. Normal weight classification was plus five to minus five pounds from the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables.

To be included in the underweight sample groups a student must weigh at least 15% under the average weight by height as measured by the Metropolitan Life Insurance Company weight tables. From the 1984 data, 38 males and 74 females were identified as underweight and from the 1985 data, 23 males and 51 females were identified as underweight.

Those students who met the criteria for one of the weight groups but whose PIT results did not meet the criteria for internal reliability were eliminated from this

study. Thirteen subjects were eliminated. From the 1984 PIT data one male and one female obese subject, two normal weight female subjects, and one male and one female underweight subjects were eliminated. From the 1985 PIT data, two obese male subjects, two normal weight male subjects and one normal weight female subject and one male and one female underweight subjects were eliminated.

Procedures

The Picture Identification Test was mailed to the 1984 and 1985 freshmen classes at the College of William and Mary as part of a research project on motives and academic adjustment. In the cover letter accompanying the test, the students were told that their test results would not become part of any official academic record, that only statistical results would ever be published, and that the results of each individual would be kept confidential by the project staff. The letter also informed students that the primary purpose for administering the test was to learn more about the relationship between motives and academic adjustment and that the results of the research would be used in helping students with motivation problems who seek counseling services at the Center for Psychological services at the College of William and Mary. Students were given the option to contact the Center for Psychological Services to receive

their individual test results and interpretations. Also enclosed with the test materials and cover letter was an addressed envelope to return the test results. Students were requested to return the results as soon as possible. The taking of the test was optional. All PIT data was coded. This researcher did not have access to the names of the respondents.

Of the 1169 entering freshmen who were mailed the Picture Identification Test in the summer of 1984, 595 completed it. Of the 1249 freshmen who were mailed the Picture Identification Test in the summer of 1985, 505 completed it.

As a requirement for enrollment in the College of William and Mary, every freshmen must supply the Student Health Service with a report of a recent medical examination. The height and weight of each student is contained in their health report. Nursing personnel at the Health Service recorded the heights and weights of the freshmen who took the Picture Identification Test in the summers of 1984 and 1985. Included in this study were the PIT results of those students whose height and weight statistics match the criteria for the obese, normal weight and underweight groups. The criteria for inclusion in these groups were calculated from the 1983 weight tables of the Metropolitan Life Insurance Company.

Instrumentation

The Picture Identification Test (PIT)(1980) is a semi-projective, objectively scored personality test. The test measures judgment, attitude and inter-need associations for 22 needs adapted from the Murray need system. PIT need associations are based on ratings a subject makes of 12 photographs of facial expressions. In part one, the subject rates each photograph on how strongly they feel the picture expresses or reveals positive (desirable and good) or negative (undesirable and bad) personal qualities of the person. The rating scale is 1(very positive), 2(moderately positive), 3(neutral or undecided), 4(moderately negative), and 5(very negative). In part two, the subject rates each of the 22 needs according to how strongly each need is expressed in a facial photograph. The ratings are determined by two factors. First, is the stimulus factor, based on the consensual, highly intuitive agreement among people as to how needs are communicated by facial expressions. The correlation coefficient between group means for the stimulus factor is > or = to .90. This coefficient has remained constant for different cultural groups (Chambers & Surma, 1979). The ratings are also influenced by projection (people's beliefs about how needs interact) (Chambers, 1981).

Strength of expression of a need is rated on a scale of

1 (very definite expression of the motive, 2) some expression of the motive, 3) neutral or undecided, 4) does not express the motive, 5) definitely does not express the motive. Over the series of 12 photographs of six individual males and six females the average absolute difference (distance) between the ratings for each pair of needs (231) or dyads is computed.

Association scores have to do with simultaneous associations. The associations are of a simultaneous or synchronic nature because a photograph shows a person's expression at a particular moment in time. The PIT need association scores are thus measures of synchronic states (measures at one point in time). A succession of synchronic states can reveal cyclic patterns which indicate a diachronic dynamic system (Chambers, 1981).

Analyses of PIT need association matrices by multi-dimensional scaling procedures form a three-dimensional structure (Chambers & Surma, 1979). Within each dimension needs are organized in relation to the function or character of the dimension. On the basis of the location of needs, the three dimensions were named: the Combative, the Personal and the Competitive Dimensions. The Combative Dimension is emphasized in situations where there is a struggle for possession, control or influence over people and things. The Personal Dimension is emphasized in

situations where we wish to establish or maintain a certain degree of emotional closeness or distance in our relationships with people. The Competitive Dimension is emphasized in situations where we wish to develop competence, skill, knowledge, and ability or when we wish to test our ability against our own performance or the performance of others (Chambers, 1981).

Needs at one end of each dimension are diametrically opposed to needs at the other end of the dimension. When needs at one end of the dimension are activated, needs at the other end become opposed to the needs in the active area. If needs at opposite ends of the dimension are closely or simultaneously expressed, conflict will arise in the motivational system. For example, if the need of Achievement located in the upper part of the Competitive Dimension is simultaneously expressed with the need of Aggression located in the lower part of the Competitive Dimension, conflict will arise. Psychological effectiveness is measured by the ability to move from one dimension to another, and up and down the entire range of each dimension depending on the situation. (Chambers, 1981). The basic assumptions underlying the construction of the PIT is that behavior is contingent on motivation and motivation is contingent on beliefs. The PIT measures certain aspects of motivation via associations of needs, attitudes and

judgments (which reflect beliefs). The associations differentiate people with different types of adjustment and personality.

The latest version of the PIT(1980) is normed on a sample of approximately 800 students from the College of William and Mary.

Definitions of the measures and needs used in the PIT are located in appendices A and B.

Reliability

Reliability coefficients of internal consistency were established by split-half correlation. The average coefficient for associations between needs is .72.

PIT results for all subjects in this study were checked for internal consistency by split-half correlation. Those test results which were not internally consistent as operationally defined by a coefficient less than .50 and/or a Need Differential Sum (from the multidimensional scaling program) of 20.0 or less were eliminated from the study. This procedure was conducted to detect lie or random responses. Thirteen subjects were eliminated from the study.

Validity

Bart and Holmes (1986) state that:

> the validity of the Picture Identification Test is difficult to establish. Traditional statistical validation techniques are not applicable because of the three dimensional structure of the PIT. There are no other measures which can be used for "concurrent validity," since even the tests which use Murray's needs do so in an entirely different way. (p. 1).

The construct validity of the PIT has been established by the discrimination of clinical groups from normal subjects. Normal subjects have demonstrated similar patterns of need associations (Chambers, 1972; Chambers & Wilson, 1971). Statistically significant differentiations between clinical groups and normal subjects on PIT need variables have been demonstrated for parasuicides (Gold, 1985), anorectic, bulimic and obese college women (Ondercin, 1984), homosexuals (Chambers & Surma, 1976), narcotic addicts (Chambers, 1972), pathological groups (Chambers & Surma, 1977), male prisoners (Chambers & Ventis, 1975), and anxiety neurotics, drug addicts and paranoid schizophrenics (Chambers & Lieberman, 1965).

Predictive validity was established by personal communications from clinicians who regularly use the PIT in their practice.

The clinicians were asked: 1) How effective is the PIT in assessing client characteristics; 2) What are the strengths of the PIT; and 3) What are your criticisms of the PIT. In answer to the first question, the clinicians

indicated that the PIT is highly effective in assessing client characteristics. Specifically as it relates to needs which are or are not being appropriately satisfied (L. Bart, V. Caminer, J. Pattis, M. Tribble & L. Holmes, personal communication, December, 1985). A majority of clients report that the test results are an accurate assessment of their characteristics (M. Tribble & J. Pattis, personal communication, December, 1985).

One strength of the PIT is in the way it combines projective stimuli, objective scoring and sophisticated statistical analysis (L. Bart, personal communication, December, 1985). The method of objectifying data may be seen as having more validity than the therapist's opinion, which aids the process of client/therapist collaboration (M. Tribble & J. Pattis, personal communication, December, 1985).

A second strength of the PIT is in helping clients identify needs within their motivational system which are or are not being met (J. Pattis, J. Finch & M. Tribble, personal communication, December, 1985). Furthermore test interpretations can help clients look at their belief systems which may be interfering with their ability to meet their needs (M. Tribble & J. Pattis, personal communication, December, 1985).

A weakness of the PIT is in the computer generated

interpretations. Clients feel that the interpretations are too general and the results could fit anyone (M. Tribble & J. Pattis, personal communication, December, 1985). Furthermore interpretive statements are technical (L. Holmes, personal communication, December, 1985) and a trained clinician is needed to facilitate the parallel between the results and client behavior (V. Caminer, personal communication, December, 1985).

Another disadvantage of the PIT is that most of the predictive hypotheses lack empirical validation. The research has yet to be done (L. Bart, personal communication, December, 1985).

Research Design

The research design for this study is a cross-validation causal-comparative design. According to Borg and Gall (1983) "The causal-comparative method is aimed at the discovery of possible causes for the phenomenon being studied by comparing subjects in whom a characteristic is present with similiar subjects in whom it is absent or present to a lesser degree" (p. 355). The study was designed to discover what, if any, relationships exist between weight of subject and PIT motivation measures.

The data collected in the fall of 1984 was cross-validated against the data collected in the fall of

1985. In multivariate designs, the large number of variables increases the probability of finding significance by chance between the variables. Cross-validation determined if significant results found in the 1984 data remained constant in the 1985 data. This increased the probability that significant results found in both sets of data were reliable discriminators of the weight groups.

Null Hypotheses

1. There will be no difference between the obese groups and the normal weight and underweight control groups on the Problem Scores for the following needs.
a. The Ego needs of Dominance, Autonomy, and Sex. b. The Avoidance needs of Harm Avoidance, Blame Avoidance, Inferiority Avoidance, and Deference. c. The Exhibition need. d. The Gratitude need.
2. There will be no difference between the obese groups and the normal weight and underweight control groups on the Confusion Score of the Personal and Combative Dimensions.
3. There will be no difference betwen the obese groups and normal weight and underweight control groups on the Competitive Dimension Weight and Attitude Correlation.
4. There will be no difference between the obese groups and normal weight and underweight control groups on the Personal Dimension Attitude Correlation and for the

Dimension Weight.

5. There will be no difference betweeen the obese groups and normal weight and underweight control groups on the Combative Dimension Weight.

Statistical Analysis Technique

In order to assess inter-group differences, t-tests were performed on all relevant PIT variables. For example, the difference of the sample means of the obese, normal weight and underweight groups were calculated for the Problem Scores for each of the 22 needs.

For each sample a variable was considered cross-validated if differences occurred in the same direction between the same pair of obese, normal weight and underweight groups at $p<.05$ for both years.

From the significant mean and/or variance differences for PIT measures which discriminated ($p<.05$) between the obese and non-obese groups for both the 1984 and 1985 entering freshmen, weight discriminant scales were developed. The scales were based on standard scores (absolute values) which exceeded upper and/or lower boundaries derived from the discriminating PIT measures. Scales were constructed to predict classification in an underweight group (scale 1), an average weight group (scale 2), or an overweight group (scale 3). The scale with the

subject's largest (weighted) score determined the subject's predicted classification. The scales were expected to classify subjects with better than chance prediction in their actual weight groups. If successful, the scales could be used to predict classification of subjects whose actual group membership is unknown. Separate scales were constructed for males and females.

Summary of Methodology

The Picture Identification Test (PIT) was mailed to all freshmen who were to be enrolled at the College of William and Mary for the fall semesters of 1984 and 1985. Out of the 1169 freshmen who were enrolled for the fall semester of 1984, 576 completed the PIT; and of the 1249 freshmen who were enrolled for the fall semester of 1985, 505 completed the PIT. As part of the enrollment process each freshmen must supply the student health service with a recent medical exam. A measurement of the student's height and weight are included in this medical exam. Nursing personnel at the Student Health Service recorded the heights and weights of each student who took the PIT in the summers of 1984 and 1985. Three groups were selected: obese, normal weight and underweight. Twenty-seven males and 25 females from the freshmen class of 1984, and 23 males and 18 females from the freshmen class of 1985, whose weight was at least 15% above

the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables were included in the obese group. The normal weight control groups were comprised of the PIT results from 45 males and 49 females from the freshmen class of 1984, and 59 males and 45 females from the freshmen class of 1985. Normal weight classification was plus five to minus five pounds from the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables. PIT data from 38 males and 74 females from the freshmen class of 1984 and PIT data from 23 males and 51 females from the freshmen class of 1985, made up the underweight groups. To be included in the underweight groups a student's weight had to be at least 15% below the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables. All PIT data were coded. This researcher did not have access to the names of the respondents.

The research design is a cross-validation causal-comparative design. In order to assess inter-group differences, t-tests were performed on all relevent PIT variables. The null hypotheses were rejected or accepted at the 5% level of significance. The 1984 PIT data were cross-validated against the 1985 PIT data to determine which, if any, results were significantly constant for both years.

An obesity sign scale was developed from PIT measures which discriminate between the obese and non-obese groups. The scale was derived from the cross-validated freshmen data and was tested for discriminant function on the combined 1984 and 1985 freshmen data.

Chapter IV

Results

This study was conducted to assess whether the Murray-based personal need systems of obese college students differ from those of normal weight and underweight college students. The assumption is that the need systems of obese college students will differ from normal weight and underweight college students, and that this difference will occur because obese college students in comparison to normal weight and underweight college students have not learned to differentiate and organize their needs in ways which would maximize satisfaction of all their needs. In other words, obese college students overeat to satisfy psychological needs which would be best served by other behaviors.

Previous personality research has been inconclusive as to whether a distinct personality profile exists for the obese. This study attempted to develop an obese personality profile from the differences in need systems of the underweight, normal weight and obese groups.

In order to test this assumption t-tests were performed on 24 sets of PIT measures for male and female underweight, normal weight and obese groups of the 1984 and 1985 entering freshmen classes. The results from t-test analyses for the 1984 female weight groups were cross-validated against the

t-test results from the 1985 female weight groups. The t-test results from the 1984 male weight groups were cross-validated against the t-test results from the 1985 male weight groups. This was to insure that results from the 1984 data remained constant for the 1985 data. An obesity sign scale was developed from the significant mean and variance differences for PIT measures which discriminated ($p<.05$) between the obese and non-obese groups. The obesity scale was derived from the cross-validated freshmen data and was tested for discriminant function on the combined 1984 and 1985 freshmen data.

Five research hypotheses were postulated. The hypotheses were accepted or rejected at the $p<.05$ level depending on whether significant results from the 1984 data remained significant for the 1985 data.

For purposes of this study Group 1 = 1984, 1985 underweight males, Group 2 = 1984, 1985 normal weight males, Group 3 = 1984, 1985 obese males, Group 4 = 1984, 1985 underweight females, Group 5 = 1984, 1985 normal weight females, and Group 6 = 1984, 1985, obese females.

Hypothesis 1

Hypothesis 1 stated that the obese groups would show

significantly higher Problem Scores than the normal weight and underweight control groups on the following sets of needs: a. The Ego needs of Dominance, Autonomy, and Sex. b. The Avoidance needs of Harm Avoidance, Blame Avoidance, Inferiority Avoidance and Deference. c. The Exhibition need. d. The Gratitude need.

Females

For the Ego needs of Dominance, Autonomy, and Sex there were no significant differences among the 1984 or the 1985 female groups. Part a. of research Hypothesis 1 for the female groups was rejected.

For the Avoidance needs of Harm Avoidance, Blame Avoidance, Inferiority Avoidance, and Deference, there were no significant differences among the 1984 or the 1985 female groups. Part b. of research Hypothesis 1 was rejected.

T-test analysis revealed that the 1985 obese female group had a significantly higher mean on the Problem score for the Exhibition need in comparison to the 1985 underweight female control group. This significant difference did not appear for the 1984 obese and underweight female groups. Because the results from the 1985 obese and underweight female groups did not cross-validate on the 1984 obese and underweight female groups part c. of research Hypothesis 1 was rejected. (Table 1)

T-test analysis revealed that the 1984 obese female group had a significantly higher variance on the Problem Score for the Gratitude need in comparison to the 1984 normal weight female control group. This significant difference did not remain constant for the 1985 obese and normal weight female groups. Therefore part d. of research Hypothesis 1 was rejected. (Table 2)

Table 1

T-Test Results From 1984 and 1985 Underweight (4) and Obese (6) Female Groups for Need Problem Score, Exhibition

Variables	M(4)	M(6)	SD(4)	SD(6)	F(p)	T(p)
(84)ProbEXH	.813	.681	.618	.565	.639	.348
(85)ProbEXH	.753	1.16	.553	.751	.097	.016

Table 2

T-Test Results From 1984 and 1985 Normal Weight (5) and Obese (6) Female Groups for Need Problem Score, Gratitude

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)ProbGRA	.895	.948	.491	.689	.046	.735
(85)ProbGRA	.751	.847	.681	.531	.264	.597

Males

No significant differences were found among the 1984 obese male group and the normal weight and underweight male control groups for all parts of Hypothesis 1. Because no significant results were found for the 1984 male weight groups for Hypothesis 1 this excludes the possibility of any cross-validation with significant results found among the 1985 male weight groups for Hypothesis 1. Therefore, all parts of Hypothesis 1 for the male weight groups were rejected.

Although no significant differences were found among the 1984 obese male group and the 1984 normal weight and underweight male control groups for Hypothesis 1, there were significant differences found among the 1985 male groups for research Hypothesis 1.

Table 3

T-Test Results From
1985 Normal Weight (2) and Obese (3) Male Groups
for Need Problem Scores, Autonomy, Exhibition and Sex

Variables	M(2)	M(3)	SD(2)	SD(3)	F(p)	T(p)
(85)ProbAUT	1.57	2.08	.765	1.10	.027	.058
(85)ProbEXH	.893	1.17	.577	.854	.016	.151
(85)ProbSEX	1.55	2.08	.882	1.16	.093	.027

The 1985 obese male group had a significantly higher mean and variance than the the 1985 normal weight male control group on the Problem Score for the Autonomy need. On the Problem Score for the Exhibition need, the 1985 obese male group had a significantly higher variance than the 1985 normal weight male control group. For the Sex need for the Problem Score, the 1985 obese male group had a significantly higher mean than the 1985 normal weight male control group. (Table 3)

Hypothesis 2

Hypothesis 2 stated that there would be a significantly greater confusion between the Personal and Combative Dimensions for the obese groups than for the normal weight and underweight control groups.

There were no significant differences between the 1984 and 1985 female and male weight groups on the Confusion Score for the Personal and Combative Dimensions. Therefore Hypothesis 2 for both the female and male weight groups was rejected.

Hypothesis 3

Hypothesis 3 stated that the Weight and Attitude

Dimension Correlation for the Competitive Dimension would be significantly lower for the obese groups than for the normal weight and underweight control groups.

Females

There were no significant differences between the 1984 and 1985 female weight groups on the Dimension Weight Correlation for the Competitive Dimension.

There was a significant difference between the 1984 underweight and obese female groups for the variance on the Competitive Dimension Attitude Correlation. The 1984 obese female group had a significantly higher variance than the 1984 underweight female group. This significant difference did not cross-validate to the 1985 underweight and obese female groups. Therefore, for the female groups, Hypothesis 3 was rejected on both the Weight and Attitude Correlations for the Competitive Dimension. (Table 4)

Table 4

T-Test Results From
1984 and 1985 Underweight (4) and Obese (6) Female Groups
for Dimension Attitude Correlation, Competitive Dimension

Variables	M(4)	M(6)	SD(4)	SD(6)	F(p)	T(p)
(84) COMPD	.243	.241	.218	.301	.038	.977
(85) COMPD	.257	.222	.239	.270	.489	.613

Males

There were no significant differences between the 1984 and 1985 male weight groups on the Competitive Dimension Weight or Attitude Correlation. Hypothesis 3 was rejected for the male weight groups.

Hypothesis 4

Hypothesis 4 stated that the Personal Dimension Attitude Correlation and/or Weight would be significantly different for the obese groups than for the normal weight and underweight control groups.

Females

There was a signficant difference between the 1984 obese female group and the 1984 underweight female control group on the variance for the Personal Dimension Weight Correlation. The variance was signficantly higher for the 1984 obese female group. There was no cross-validation of these results to the 1985 obese and underweight female groups.

There was a significant difference between the 1985 obese female group and the 1985 normal weight female control group on the variance for the Personal Dimension Weight Correlation. The variance was significantly higher for the 1985 obese female group. There was no cross-validation of

these results to the 1984 obese and normal weight female groups.

There were no significant differences among the 1984 or the 1985 female weight groups on the Personal Dimension Attitude Correlation. Therefore, for the female groups, Hypothesis 4 was rejected on both the Weight and Attitude Correlations for the Personal Dimension. (Table 5)

Table 5

T-Test Results From 1984 and 1985 Underweight (4), Normal Weight (5) and Obese (6) Female Groups for Dimension Weight Correlation, Personal Dimension

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)PERSD	30.67	32.12	5.01	6.83	.067	.304
(85)PERSD	30.53	30.50	4.15	7.47	.002	.985
Variables	**M(4)**	**M(6)**	**SD(4)**	**SD(6)**	**F(p)**	**T(p)**
(84)PERSD	32.15	32.12	4.72	6.83	.017	.985
(85)PERSD	30.88	30.50	5.35	7.47	.069	.816

Males

There were no significant differences between the 1984 and 1985 male weight groups on the Personal Dimension Weight and Attitude Correlations. Hypothesis 4 was rejected for

the male weight groups.

Hypothesis 5

Hypothesis 5 stated that there would be a significantly higher Combative Dimension Weight for the obese groups than for the normal weight and underweight control groups.

There were no significant differences between the 1984 and 1985 female and male weight groups on the Combative Dimension Weight. Hypothesis 5 was rejected for both the female and male weight groups.

Additional Findings

Females

Eleven variables cross-validated for the 1984 and 1985 female weight groups. On the Need Valence Score (Val), the sums of the variances were significantly greater for the normal weight female groups than for the underweight female groups.

For the underweight and obese female groups the variances for the Order need on the Need Valence Score (Val), were significantly greater for the obese groups than for the underweight female control groups.

For the normal weight and obese female groups the

variance for the Counteraction need was significantly different on the Sum of the Absolute Deviation Dyads for each need (Sumsa). The variances on the Counteraction need for the obese female groups were significantly greater than for the normal weight female control groups.

For the normal weight and obese female groups the variance for the Counteraction need was significantly different for the Sum of the Absolute Deviation Dyads for each need based on male pictures (Sumsm). The variances for the obese female groups were significantly greater than for the normal weight female groups.

On the Differential Deviation Score for the male pictures (DifDvm), the variances for the needs of Counteraction and Play were significantly different for the normal weight and obese female groups. For both needs the variances for the obese female groups were significantly greater than for the normal weight female control groups.

For the underweight and normal weight female groups the variances for the Dominance need were significantly different on the Differential Deviation Score for the female pictures (DifDvf). The variances for the normal weight female groups were significantly greater than for the underweight female groups.

On the Deviation Attitude Score (DeVatt), the variances for the Sentience need were significantly different between

the underweight and obese female groups and for the normal weight and obese female groups. The variances for both the underweight and normal weight female control groups were significantly greater than for the obese female groups.

For the underweight and obese female groups the variances for the Affiliation need were significantly different on the Need Judgement Score (Judg). The variances for the obese female groups were significantly greater than for the underweight female groups.

For the normal weight and obese female groups the variances for the Defendance need were significantly different for the Problem Score (Prob). The variances for the obese female groups were significantly greater than for the normal weight female groups.

Table 6

Cross-Validated Variables
for 1984 and 1985 Underweight (4),
Normal Weight (5) and Obese (6) Female Weight Groups

Variables	M(4)	M(5)	SD(4)	SD(5)	F(p)	T(p)
(84)ValSum	34.73	33.89	2.74	3.53	.049	.970
(85)ValSum	35.20	35.22	2.05	3.16	.003	.166

Variables	M(4)	M(6)	SD(4)	SD(6)	F(p)	T(p)
(84)ValORD	35.17	34.00	4.40	6.68	.007	.417
(85)ValORD	35.96	33.89	3.43	5.29	.018	.135

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)SumsaCNT	.661	.660	.202	.317	.007	.986
(85)SumsaCNT	.589	.678	.167	.239	.057	.162

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)SumsmCNT	14.96	14.96	3.27	5.49	.002	.994
(85)SumsmCNT	13.01	16.15	3.91	6.29	.011	.020

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)DifdvmCNT	7.54	7.54	2.04	2.98	.026	.999
(85)DifdvmCNT	6.27	8.50	2.89	4.83	.006	.027

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)DifdvmPLA	7.08	7.90	1.99	2.80	.046	.199
(85)DifdvmPLA	6.62	7.90	1.81	2.69	.037	.032

Variables	M(4)	M(5)	SD(4)	SD(5)	F(p)	T(p)
(84)DifdvfDOM	7.18	8.07	2.62	3.70	.019	.182
(85)DifdvfDOM	6.89	7.54	2.83	3.68	.043	.301

Variables	M(4)	M(6)	SD(4)	SD(6)	F(p)	T(p)
(84)DeVattSEN	-.222	-.120	.632	.343	.001	.309
(85)DeVattSEN	-.179	-.094	.672	.408	.027	.532

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)DevattSEN	-.222	-.120	.571	.343	.008	.338
(85)DevattSEN	-.326	-.094	.674	.408	.028	.102

Variables	M(4)	M(6)	SD(4)	SD(6)	F(p)	T(p)
(84)JudgAFF	.812	.790	.094	.131	.032	.435
(85)JudgAFF	.802	.745	.089	.139	.014	.048

Variables	M(5)	M(6)	SD(5)	SD(6)	F(p)	T(p)
(84)ProbDFD	1.99	1.55	1.13	1.72	.014	.254
(85)ProbDFD	1.53	1.87	.899	1.28	.058	.311

Males

Seven variables cross-validated for the 1984 and 1985 male groups. On the Differential Deviation Score for the male pictures (DifDvm), the variances for the Play need were significantly different between the underweight and normal weight male groups. The variances for the normal weight male groups were significantly greater than for the

underweight male groups.

On the Deviation Attitude Score (Devatt) the means for the Play need were significantly different for the underweight and obese male groups. The means for the underweight groups were significantly greater than for the obese male groups.

For the underweight and normal weight male groups and for the underweight and obese male groups the variances for the Succorance need were significantly different on the Central-Peripheral Score (Cenper). The variances for the normal weight and obese male groups were significantly greater than for the underweight male groups.

On the Central-Peripheral Score (Cenper), the variances for the Gratitude need were significantly different for the normal weight and obese male groups. The variances for the normal weight male groups were significantly greater than for the obese male groups.

On the Central-Peripheral Score (Cenper) the variances for the Sex need were significantly different for the normal weight and obese male groups. The variances for the obese male groups were significantly greater than for the normal weight male groups.

For the underweight and normal weight male groups the Attitude Correlations for the male pictures for the Personal Dimension (RattMD) were significantly different. The

Attitude Correlations for the underweight male groups were signifcantly greater than for the normal weight male groups.

Table 7

Cross-Validated Variables
for 1984 and 1985 Underweight (1),
Normal Weight (2) and Obese (3) Male Weight Groups

Variables	M(1)	M(2)	SD(1)	SD(2)	F(p)	T(p)
(84)DifdvmPLA	7.19	8.12	2.51	3.69	.018	.174
(85)DifdvmPLA	7.38	7.84	1.75	2.75	.023	.373

Variables	M(1)	M(3)	SD(1)	SD(3)	F(p)	T(p)
(84)DeVattPLA	1.75	-.128	.588	.614	.794	.048
(85)DevattPLA	.251	-.141	.550	.614	.610	.027

Variables	M(1)	M(2)	SD(1)	SD(2)	F(p)	T(p)
(84)CenperSUC	-.853	-.949	3.59	5.47	.010	.924
(85)CenperSUC	-.539	-.512	3.55	5.18	.053	.978

Variables	M(1)	M(3)	SD(1)	SD(3)	F(p)	T(p)
(84)CenperSUC	-.85	-.36	3.59	7.28	.0001	.747
(85)CenperSUC	-.539	.909	3.55	6.01	.017	.327

Variables	M(2)	M(3)	SD(2)	SD(3)	F(p)	T(p)
(84)CenperGRA	-1.18	.27	2.20	1.53	.049	.041
(85)CenperGRA	-.856	-1.14	3.32	2.11	.021	.648

Variables	M(2)	M(3)	SD(2)	SD(3)	F(p)	T(p)
(84)CenperSEX	.722	1.28	3.68	7.93	.0001	.731
(85)CenperSEX	1.27	2.57	4.66	7.52	.004	.445

Variables	M(1)	M(2)	SD(1)	SD(2)	F(p)	T(p)
(84)RattMDPERSD	.323	.195	.215	.276	.123	.022
(85)RattMDPERSD	.309	.160	.261	.291	.590	.035

Weight Scales

The weight scales were developed from Picture Identification Test (PIT) variables that cross-validated for the 1984 and 1985 male and female weight groups.

Almost all of the variables which discriminated the three weight groups discriminated on the basis of F tests which showed differences in the variances between two of the three weight groups. When the F test shows significant variance differences between two groups, it means that one group had a narrower range on the distribution of scores, based on a smaller standard deviation and the second group

had a broader range on the distribution of scores, based on a larger standard deviation. It follows logically then that boundaries can be set based on the narrow range of scores, which would include most of the subjects from the group with the smaller variance. Scores beyond these boundaries would be scores of subjects from the large variance group. For example, if boundaries are set based on the smaller variance of the underweight group as compared with the obese group, subjects from the underweight group would not be likely to score beyond these boundaries and scores beyond the boundaries would be more likely to belong to the obese group. This is the basic principle used to discriminate two groups based on variance differences. The boundaries were set at one standard deviation above and below the mean of the group with the smaller variance. A score from an unknown subject which falls outside of the boundaries is a plus score for belonging to the group with the larger variance and a negative score for belonging to the group with the smaller variance.

Female Scales

Eleven cross-validated variables were used in the development of the female scales.

The first variable in the scale was the Valence (Val) Sum Score. The Valence Sum Score is the sum of all the 22 need Valence Scores. There was a significant difference

between the underweight and normal weight female groups on the variance for this score. The lower boundary of the scale was set on the group with the smaller variance, the underweight group. The results showed that if a subject's score fell below the lower boundary, this would be a negative indicator for membership in the underweight group. Thus, subjects who attribute needs strongly to the pictures are not apt to be underweight.

Discriminating variable two was the Valence (Val) Score for the Order need. There was a significant difference between the underweight and obese groups on the variance for this score. The lower boundary of the scale was set on the group with the smaller variance, the underweight group. Therefore, a score beyond the lower boundary was a negative indicator for membership in the underweight group, and a positive indicator for membership in the obese group. A low Valence Score for a need indicates that a subject saw the need more strongly in the 12 pictures than most subjects. Subjects with low Valence Scores for the Order need tended to be obese and tended not to be underweight. If you were trying to predict which group a new female subject would fall into, a low Valence Score for the Order need would be an indicator for membership in the obese group.

Discriminating variable three was the Sum of the Absolute Deviation Dyads (Sumsa) Score for the Counteraction

need. There was a significant difference between the normal weight and obese groups on the variance for this score. The upper boundary of the scale was set on the group with the smaller variance, the normal weight group. Subjects who fell beyond the upper boundary were more apt to be in the obese group. The obese group varied only in the direction of higher Sumsa Counteraction need Scores. So an unusually high Sumsa Counteraction need Score would be an indicator for belonging to the obese group.

Discriminating variable four was the Sum of the Absolute Deviation Dyads Score for the Counteraction need based on the male pictures (Sumsm). There was a significant difference between the normal weight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the normal weight group. Subjects falling beyond the upper boundary were more apt to be in the obese group. A high Deviation Association Score based on male pictures, would be an indicator for belonging to the obese group.

Discriminating variable five was the Differential Deviation Score for the Counteraction need based on male pictures (Difdvm). There was a significant difference between the normal weight group and obese group on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the normal

weight group. A score set beyond the high boundary would be a positive indicator for belonging to the obese group and a negative indicator for belonging to the normal weight group.

Discriminating variable six was the Differential Deviation Score for the Play need based on male pictures (Difdvm). There was a significant difference between the normal weight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the normal weight group. A score which fell above the upper boundary was a positive indicator for membership in the obese group. A high Differential Deviation Score for the Play need based on the male pictures would be an indicator for belonging to the obese group.

Discriminating variable seven was the Differential Deviation Score for the Dominance need based on the female pictures (Difdvf). There was a significant difference between the underweight and normal weight groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the underweight group. A score on the high end of the scale, beyond the upper boundary would be a negative indicator for belonging to the underweight group and a positive indicator for belonging to the normal weight group. The underweight group did not have high scores in comparison to the normal weight group. Presumably the underweight group has better beliefs

about how women express the Dominance need.

Discriminating variable eight was the Deviation Attitude Score for the Sentience need (DeVatt). There was a significant difference between the underweight groups and the obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the obese group. A score outside of these boundaries would be a positive indicator for membership in the underweight group.

Discriminating variable nine was the Deviation Attitude Score for the Sentience need (DeVatt). Discriminating variable nine differed from discriminating variable eight in that the significant variance differences were between the normal weight and obese groups rather than the underweight and obese groups. The boundaries for this scale were set on the group with the smaller variance, the obese group. A score outside these boundaries would be a positive indicator for membership in the normal weight group. Therefore, attitudes pertaining to the Sentience needs vary on a much wider basis for the underweight and normal weight groups as compared with the obese group.

Discriminating variable ten was the Judgement Score for the Affiliation need. The Judgement Score for the Affiliation need is the correlation between the subject's ratings of the 12 pictures and the target group's average

ratings for the Affiliation need. The higher the correlation the more agreement with the target group. There was a significant difference between the underweight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the underweight group. A score below the boundary would be a positive indicator for membership in the obese group, and a negative indicator for membership in the underweight group. A significant number of obese subjects had low Affiliation Judgement Scores, indicating possible conflicts with the appropriate expression of affiliation.

Discriminating variable eleven was the Problem Score for the Defendance need (Prob). There was a significant difference between the normal weight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the normal weight group. The scale only discriminated at the high end of the boundaries, so that subjects with scores above this boundary would be more apt to be in the obese group. A higher Problem Score indicates that a subject would have more problems with a particular need. The results from this scale would indicate that subjects who have significant problems with the Defendance need are more apt to be obese than normal in weight.

Male Scales

Seven cross-validated variables were used in the development of the male scales. Discriminating variable one was the Differential Deviation Score for the Play need based on male pictures (Difdvm). The higher the Differential Deviation Score, the more deviation from the target model. There was a significant difference between the underweight and normal weight groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the underweight group. This variable only discriminated at the upper boundary. So a high Differential Deviation Score for the Play need based on the male pictures would be a negative indicator for membership in the underweight group. The underweight group did not have high Differential Deviation association scores for the Play need based on the male pictures.

Discriminating variable two was the Deviation Attitude Score for the Play need (DeVatt). This discriminating variable did not differentiate the underweight and obese groups.

Discriminating variable three was the Central-Peripheral Score for the Succorance need (Cenper). There was a significant difference between the underweight and normal weight groups on the variance for this score. The boundaries for this scale were set on the group with the

smaller variance, the underweight group. A score outside of the upper and lower boundary was a negative indicator for membership in the underweight group and a positive indicator for membership in the normal weight group.

Discriminating variable four was the Central-Peripheral Score for the Succorance need (Cenper). Discriminating variable four differed from discriminating variable three in that the significant variance differences were between the underweight and the obese groups, rather than the underweight and normal weight groups. The boundaries for this scale were also set on the underweight group, therefore a score outside of the boundaries would still be a negative indicator for membership in the underweight groups. The underweight group tended to have a more definite and restricted location of the Succorance need on the Central-Peripheral dimension than the normal weight and obese groups. This is probably a positive sign in that there is more consistency in the underweight group, which has more definite ideas about the centrality of the Succorance need. A high positive Cenper score which occurred most frequently among the obese group suggests that the Succorance need was located more at the periphery, giving this need more strength in the need systems of the obese.

Discriminating variable five was the Central-Peripheral

Score for the Gratitude need (Cenper). There was a significant difference between the normal weight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the obese group. The Cenper Score for the Gratitude need only discriminating at the lower boundary of the scale. A score below the lower boundary would be a negative indicator for membership in the obese group. A central Gratitude score would be a negative indicator for membership in the obese group. This finding is consistent with the results from Ondercin's (1984) study which found the Gratitude need peripherally placed in the need systems of obese college women.

Discriminating variable six was the Central-Peripheral Score for the Sex need (Cenper). There was a significant difference between the normal weight and obese groups on the variance for this score. The boundaries for this scale were set on the group with the smaller variance, the normal weight group. The Central-Peripheral Score for the Sex need discriminated at both ends of the scale. A score outside of the boundaries on either end of the scale, either moving sex to the center or farther to the periphery, would be a positive indicator for membership in the obese group and a negative indicator for membership in the normal weight group. Therefore, the normal weight group was in good

agreement on the Central-Peripheral location of the Sex need. However, the obese group had difficulty establishing the location of the Sex need, either moving it to the periphery or closer to the center.

Discriminating variable seven was the attitude correlation for the Personal Dimension based on the male pictures (RATTMD). There was a significant difference between the underweight and normal weight groups on the mean for this score. The upper boundary for this scale was set on the group with the larger variance, the normal weight group. The boundary was set on the larger variance because significant differences between the two groups was on the mean and not the variance. This variable only discriminated at the high end of the scale, and only for the underweight group. Scores above the boundary would be indicative of membership in the underweight group. A positive attitude toward the Personal Dimension based on male pictures would be an indicator for membership in the underweight group.

Female-Male Scale Classification

Weight scales were constructed from standard scores (absolute values) which exceeded upper and/or lower boundaries derived from the discriminating PIT measures. The scales predicted classification in an underweight group (scale 1), normal weight group (scale 2), and an overweight

group (scale 3). The scale with the subject's largest (weighted) score determined the subject's predicted classification.

A chi-square analysis of the combined scale classification data for the 1984 and 1985 female weight subjects was significant at $p<.01$. At a chance level, the expected number of underweight subjects who should have been classified as underweight (scale 1) was 55.81. The actual observed number was 65. At a chance level, the expected number of normal weight subjects who should have been classified as normal weight (scale 2) was 31.23. The actual observed number was 41. At a chance level, the expected number of obese subjects who should have been classified as obese (scale 3) was 9.51. The actual observed number was 16.

The chi-square analysis of the combined scale classification data for the 1984 and 1985 male weight subjects was also significant at $p<.01$. At a chance level, the expected number of underweight subjects who should have been classified as underweight (scale 1) was 30.67. The actual observed number was 39. At a chance level, the expected number of normal weight subjects who should have been classified as normal weight (scale 2) was 28.55. The actual observed number was 36. At a chance level, the expected number of obese subjects who should have been

classified as obese (scale 3) was 11.14. The actual observed number was 20.

The female and male scales successfully predicted subject classification at a better than chance level ($p<.01$). However, the percentage of "hits" or "misses" was not sufficiently high for confident prediction of individual subjects.

Summary

Statistical analysis of PIT scores for the 1984 and 1985 male and female weight groups indicated that there were no significant cross-validations on the research hypotheses. Additional statistical analysis indicated that there were 11 variables that cross-validated for the female weight groups, and seven variables that cross-validated for the male weight groups. Weight discriminant scales were developed from the significant mean and/or variance differences for PIT measures which discriminated ($p<.05$) between the obese and non-obese groups for both the 1984 and 1985 entering freshmen. The weight scales successfully predicted group classification for the combined 1984 and 1985 female and male underweight, normal weight and obese subjects. Therefore, these scales could be used in future research to predict classification of subjects whose weight group membership is unknown.

Chapter V

Discussion, Conclusions and Recommendations

This final chapter discusses the relevant findings of this study, states conclusions, and offers recommendations for future research.

Discussion

This study was undertaken to determine if a personality profile exists for obese college students based on their personal need systems. Previous personality research on obese subjects has been inconclusive. Some of the research has identified personality traits which are common among the obese, while other studies have claimed that the personalities of the obese are as diverse as the general population. Previous research has also been inconclusive as to whether the obese are more psychologically dysfunctional than normal weight individuals. The research results are discussed in light of this previous research.

The findings for this study are discussed in terms of the five null hypotheses presented in Chapter 3, and the PIT variables which cross-validated for the 1984 and 1985 female and male weight groups.

Hypothesis 1

The null hypothesis that there would be no differences

between the obese groups and the normal weight and underweight control groups on the Problem Score for the a. Ego needs of Dominance, Autonomy and Sex. b. the Avoidance needs of Harm Avoidance, Blame Avoidance, Inferiority Avoidance and Deference; c. the Exhibition need; and d. the Gratitude need was confirmed.

The null hypothesis was accepted, because data found significant for either the 1984 or 1985 weight groups failed to cross-validate to the corresponding year. However, some discussion is warranted for significant results found for one year of data. The results are discussed in relation to previous research.

For the 1985 underweight and obese female groups a significant difference was found on the Problem Score for the Exhibition need. The obese group showed a significantly larger variance which could indicate problems in the expression of the need. The Exhibition need is the need to express ideas and exhibit one's talents and abilities. Problems associated with the Exhibition need include chronic attention-seeking behavior, or destructive attention-seeking behavior. Research on the personality characteristics of obese people include exhibition as a problem trait. It is hypothesized that the obese use their large size as a way of gaining attention, or as a way to be different or special. Their need to gain attention by their large size is

compensation for their belief that they lack the abilities and talents necessary to gain healthy attention.

In previous research using the PIT, the Cenper Score for the Exhibition need indicated that the need was too central in the need systems of obese people, suggesting a need for attention (Ondercin, 1984).

There was also a significant difference between the 1985 normal weight and obese male groups on the Problem Score for the Exhibiton need. The obese group showed a significantly larger variance, which could indicate problems associated with this need.

Although the Exhibition need did not cross-validate on both sets of female or male data, previous research and some significant findings in this study indicate that the Exhibition need should not be excluded for consideration in any future research assessing the need systems of the obese.

For the 1984 normal weight and obese female groups a significant difference was found on the Problem Score for the Gratitude need. The obese female group showed a significantly larger variance on the Problem Score for the Gratitude need which could indicate problems in the expression of the need. Gratitude expresses the need to be appreciative, thankful and grateful. Problems associated with this need could arise from the belief that one "should" be grateful. Previous research results on the personality

traits of the obese have hypothesized that the obese are overly grateful when they feel accepted by others.

The insincere expression of the Gratitude need as a way to be accepted by others can create resentment. This resentment could lead to passive-aggressive behavior which is said to be common among the obese.

Ondercin (1984), in her PIT study of anorectic, bulimic and obese women, using the PIT found that the Gratitude need was peripheral in the motivation systems of the obese subjects. She states that this could be an indicator that obese women are less likely to be grateful to others.

The results from prior research using the PIT and some significant results from this study indicate that the Gratitude need should not be excluded for consideration in any future research assessing the need systems of the obese.

Significant differences were found between the 1985 normal weight and obese male groups on the Problem Scores for the Autonomy and Sex needs. The obese group showed a significantly larger mean and variance for the Autonomy need and a significantly larger variance for the Sex need indicating possible problems associated with these needs.

The Sex need is the need to satisfy sexual desires. The obese male group showed a significantly greater mean Problem Score than the normal weight male group for the Sex need. In fact, the mean Problem score for the obese group

fell into the pathological range. Problems associated with the Sex need include confusion about when to express or inhibit sexual desires. Previous research on sexual expression among the obese suggests that the obese use their large size as a way to be unattractive to the opposite sex and thus avoid sex. Other research states that the large size of the obese prevents them from being attractive to the opposite sex which frustrates them in their satisfaction of this need.

Further evidence that the satisfaction of the Sex need may be a problem for the obese males in this study is the cross-validation of the Sex need on the Cenper Score for the 1984 and 1985 normal weight and obese male weight groups. The variances for the obese groups were significantly larger than for the normal weight groups. Some results for the Sex need in this study would indicate that this need should be included in any future research assessing the need systems of the obese.

The Autonomy need is the need to be free, independent and uninhibited. This need was identified as a potential problem for obese individuals because of previous research that indicated that the obese are inhibited, dependent, less assertive and immature. Poor judgement as to when to be autonomous can lead to impulsive and immature behavior, or to passivity and dependence. Only between the 1985 normal

weight and obese male groups did the Problem Score for the Autonomy need show significant differences. The obese male group showed a larger variance indicative of problems associated with this need. However, the Problem Score for the Autonomy need did not cross-validate to the 1984 male weight group and no other cross-validations appeared for any of the other PIT measures assessing the Autonomy need. It is possible that the autonomy need is adequately expressed and satisfied among this college population. William and Mary students are "academically able." It would be unlikely that they would have problems with autonomy and have been able to satisfy the requirements for admission. It would be interesting to see if significant findings for this need would appear for a more heterogeneous obese group.

There were no significant findings for the Avoidance needs for any of the male and female weight groups. Blame Avoidance (the need to avoid doing things which might arouse criticism or blame), Harm Avoidance (the need to avoid harm and danger), Inferiority Avoidance (the need to avoid failure, inadequacy and inferiority) and Deference (the need to follow the advice and guidance of those with experience and authority) were identified as potential problem needs for the obese because of conclusive research evidence that the obese are sensitive to their environment. A possible reason for the non-significant findings for the Avoidance

needs could be that previous research results are based on experimental laboratory studies, whereas the results from this study are based on a semi-projective personality test (PIT). The two different kinds of measures may be assessing different processes. The process by which the Picture Identification Test (PIT) is measuring the Avoidance needs is not the same process by which experimenters are measuring sensitivity to the environment or external cues. Sensitivity to the environment or external cues may not be an indicator for problems associated with the Avoidance needs.

The Dominance need for the Problem Score was insignificant for all sets of data. This is an interesting result in that the Dominance Need has been identified as a major problem need among the obese. The Dominance need is the need to assert leadership and act in a commanding and persuasive way. The function of the Dominance need is to organize and direct people so that energy and power can be channeled and concentrated to attain a common goal. Problems associated with the Dominance need include over-assertion and/or inappropriate assertion of the need. Prior research on the personality traits of the obese conclude that the obese use their large size as a way to assert dominance in an inappropriate combative way. It has been stated that the obese feel weak and helpless from

inadequate identity development and that their large size is a symbolic expression of strength to compensate for feelings of weakness and helplessness.

It is possible that the Dominance need is appropriately expressed among this college population. William and Mary students are "academically able" and most likely have a solid sense of identity. This affords them the ability to assert themselves to attain goals and to maintain a sense of autonomy. It is unlikely that they would have to use the Dominance need in an inappropriate and combative way.

Hypothesis 2

The null hypothesis that there would be no difference between the obese groups and the normal weight and underweight control groups on the Confusion Score for the Personal and Combative Dimensions was confirmed.

Each of the three dimensions, Combative, Personal and Competitive have independent structures. The independence of the three target dimensions indicates that they provide three distinct alternative modes of action for meeting needs. Confusion of the Personal and Combative Dimensiion structures indicate that the two dimensions are similiar in their need structures. Problems associated with Personal-Combative Dimension confusion include being hostile to people who are close when confronted with problems and

frustrations, or feeling dominated or controlled by those with whom we develop close ties. This hypothesis was tested because of research which concludes that the obese have difficulty in interpersonal relationships. This difficulty arises from hostile feelings generated toward others by either perceived social discrimination or the need to be gracious to avoid rejection and to be accepted. However, Personal-Combative confusion does not appear to be a significant problem among this obese college population.

Hypothesis 3

The null hypothesis that there would be no difference between the obese groups and normal weight and underweight control groups on the Competitive Dimension Weight and Attitude Correlation was confirmed. The research hypothesis stated that the obese subjects would have a significantly lower Weight and Attitude Correlation for the Competitive Dimension. A low Attitude and/or Weight Correlation for the Competitive Dimension indicates that the individual has an imbalance in his/her motivation system which could cause personality problems. A low correlation reflects an underemphasis on the dimension. Problems associated with low correlations include being unprepared for competitive involvement, negative feelings about improving knowledge, skills, abilities and accepting competitive challenges or

underemphasizing the importance of skills, knowledge and abilities as means for solving problems and satisfying needs. This hypothesis was proposed because research on the obese indicates that they are underachievers, who fail to adequately develop their skills, knowledge and abilities. Social psychology research indicates that the obese are underrepresented among college populations because of underachievement. The possible explanation for insignificant findings for this research hypothesis is that the obese students who are enrolled at the College of William and Mary would have to have an adequately developed Competitive Dimension to be accepted by the college and to compete academically. However, this research hypothesis could be valid for a non-college population.

Hypothesis 4

The null hypothesis that there would be no difference between the obese groups and normal weight and underweight control groups on the Personal Dimension Attitude Correlation and Weight Score was confirmed. Problems associated with the Personal Dimension include underemphasis or overemphasis on personal relationships. Underemphasis could indicate that a individual does not value close personal relationships as strongly as others, which could cause problems in relating to others or developing

friendships. Overemphasis on personal relationships could indicate that an individual is dependent on relationships for fulfillment, or that interest in people takes time away from developing other parts of the motivation system. This hypothesis was proposed in light of previous research which indicated that the obese have difficulty with interpersonal relationships, specifically in developing close personal ties to others. A possible reason why this hypothesis was not confirmed is that college students need to be interdependent on others to survive in an academic environment. Obese individuals who apply to and attend college are probably aware of the personal involvement that will be part of the college experience and are well-adjusted in the Personal Dimension. Again, a non-college obese population might show significant differences from the non-obese on the Personal Dimension.

Hypothesis 5

The null hypothesis that there would be no difference between the obese groups and normal weight and underweight control groups on the Combative Dimension Weight Score was confirmed.

The Combative Dimension is emphasized in situations where there is a struggle for possession, control, or influence over people and things. Problems associated with

the Combative Dimension weight include not being concerned with combative aspects of situations, underemphasizing the importance and use of assertiveness, strength and power when looking after interests in conflict situations. An overemphasis on the Combative Dimension may cause an individual to overreact or to be sensitive to the combative aspects of situations. It may mean that an individual places too much emphasis on power and strength as determining factors in people's lives.

This hypothesis was proposed because of previous research which indicated that the obese overemphasize strength and power in conflict situations and that their large size is a symbol of their need to overpower others. However, it is also stated that the obese are conflicted in their attitude about asserting their will, and thus will exhibit passive-aggressive behavior. This research hypothesis was not confirmed, and it is possible that either the hypothesized problems that the obese have with combative situations have been overstated, or that a college population does not reflect problems associated with the Combative Dimension.

Weight Scales

Included in this discussion of the weight scales are those cross-validated variables which are significant to the

development of a female and a male obese personality profile.

Female Scales

The weight scale for the Valence Score (Val) for the Order need was set on significant variance differences between the underweight and obese female groups. The scale discriminated between the two groups on the lower boundary of the scale. A score below the lower boundary was a positive indicator for membership in the obese group. A low Valence Score for the Order need is an indication that the obese attribute the need more strongly to others which may reflect a projection of their own strong need for order.

The Order need is the need to systematize, organize and put things in order. The basic function of the Order need is to reduce complexity or simplify relationships in order to better understand and manage one's affairs. Two common problems associated with the Order need are compulsive or excessive ordering and the inability to effectively organize.

From previous research on personality traits of the obese and the low Valence Score from the cross-validated variables, it is more likely that the obese have difficulty in establishing order. It has been stated that the Competitive Dimensions of the obese are inadequately

developed. This lack of development is said to be a consequence of their dependency on others. Dependency on others can prevent an individual from developing a sense of competence which can affect their ability to make decisions and to organize their world.

The Counteraction need cross-validated on three different measures (Sumsa, Sumsm, Difdvm) for the normal weight and obese female groups. The weight scales for all three measures discriminated at the upper boundary of the scales. On all three scales a score set beyond the upper boundary was an indicator for membership in the obese group. High deviation scores for all three measures are an indication of unrealistic beliefs about the expression and satisfaction of the Counteraction need.

The Counteraction need is the need to improve oneself and correct mistakes and shortcomings. The function of the Counteraction need is to devise more effective and satisfying ways to reach goals. Extreme overemphasis on the Counteraction need produces discouragement since it creates expectations which can never be attained. Previous research on the obese indicates that the obese are never satisfied with themselves because of their large size. They connect all attempts at self-improvement to their ability to lose weight. Thus, a common belief which is shared by the obese is that a better work status, better relationships and

overall self-improvement is connected to weight lost. The dilemma is that most obese people will be unsuccessful in losing weight or will regain the weight they have lost, thereby creating an obsesssion with self-improvement which may never be attained.

An interesting result from the significant cross-validated measures for the Counteraction need was that two of the three cross-validated measures (Sumsm, Difdvm) were based only on the male pictures. This is an indication that obese females are more likely to overemphasize the Counteraction need in their relationships with males.

The weight scale for the Differential Deviation Score for the Play need based on male pictures (Difdvm) was set on significant variance differences between the normal weight and obese female weight groups. The scale discriminated between the two groups on the upper boundary of the scale. A score above the upper boundary was a positive indicator for membership in the obese group. High Differential Deviation scores are associated with problems in the expression of a need.

The Play need is the need to play, have fun and enjoy oneself. Play usually involves activity with others. Previous research on the obese has indicated that because of their large size they are more likely to isolate themselves, and therefore are less likely to engage in play or social

behavior. This cross-validated measure (Difdvm) for the Play need was also based only on male pictures. This is an indication that obese women have difficulty in their expression of play with males.

The weight scale for the Judgement Score on the Affiliation need was set on significant variance differences between the underweight and obese female groups. The scale discriminated between the two groups on the lower boundary of the scale. A score below the lower boundary was a positive indicator for membership in the obese group. Low Affiliation Judgement Scores indicate poor perception with regard to the appropriate expression of affiliation.

The Affiliation need is the need to be friendly and sociable. It has been well-documented from previous research that some obese people have difficulty being sociable and relating to others. It has been stated that the obese isolate themselves from others because of fear of ridicule and self-consciousness about their large size. It has also been well-documented that some obese people overemphasize affiliative relationships. It has been stated that the personalities of the obese are immature. When people overemphasize or become dependent on personal relationships they may fail to develop their judgement as to when and when not to make affiliative overtures.

The Weight Scale Score for the Defendance need Problem

Score was set on significant variance differences between the normal weight and obese groups. The scale discriminated between the two groups on the high boundary of the scale. A score above the high boundary was a positive indicator for membership in the obese group. High Problem Scores are associated with problems in the expression and satisfaction of a need.

The Defendance need is the need to stand up for one's right and defend oneself. Problems relating to the Defendance need include an overreaction to defend oneself or the unwillingness to defend oneself. Previous research indicates that the obese have difficulties in both of these areas. It has been stated that the obese are more likey to be ridiculed by others. This makes them hypersensitive to criticism which may cause them to develop hostile, combative ways to defend themselves. The obese have also been known to be unwilling to defend themselves. It has been stated that the obese feel different or deviant from others, and will inhibit their needs in an attempt to be accepted. This could include the need to defend oneself.

Male Scales

The weight scale for the Central-Peripheral (Cenper) Score for the Succorance need was set on significant variance differences between the normal weight and obese

male groups. The scale discriminated between the two groups on the high boundary of the scale. A score outside of the high boundary was a positive indicator for membership in the obese group. A high positive Cenper score is an indication that the Succorance need was located more at the periphery, giving the need more strength in the need systems of the obese.

The Succorance need is the need to receive help, support, and assistance. The Succorance need has the general function of promoting a long developmental and learning state. This in turn, promotes greater adaptability, specialization and social development. The Succorance need provides the basis for developing trust. A child who calls for help but is ignored or punished becomes distrustful. The child who is indulged becomes overly trusting and dependent. Such extreme experiences create beliefs that are contradicted in adult life and are a cause of poor judgement and frustration.

Problems associated with the Succorance need include over-dependency on others, passive-aggressiveness and loneliness. Over-dependency on others develops from parents who do not allow their children the opportunities to use their initiative to cope with problems. The end results are adults who have unrealistic beliefs that they cannot cope with the ordinary stresses of life. Adults who develop

Succorance as their primary acquisition mode tend to create self-perpetuating problems. The more they depend on others, the less opportunity they have to learn how to take care of themselves, and thus they become more dependent. Another common problem associated with the Succorance need is passive-aggressiveness. Succorance is a passive acquisition mode through which people receive help and generosity from others. When Succorance is combined with aggressiveness, the motivational mixture results in passive-aggressive behavior. The behavioral expression of passive-agressiveness includes complaining, whining, demanding and temper tantrums. Passive-aggressive behavior can also take the form of manipulative attempts to make people give us something that we will not attempt to attain through our own efforts. The third common problem associated with the Succorance need is loneliness. Immature loneliness results when people want others to give them happiness and love. Immature people have a "bottomless pit" for demanding attention, sympathy, care and concern from others.

The peripheral placement of the Succorance need in the need systems of obese males means that the need is more distantly associated with other needs. Peripheral needs are more negatively valued, and are usually extreme, powerful, infrequently experienced and undesirable. The peripheral

placement of the Succorance need may mean that obese males are attempting to control the need perhaps through a reaction formation which would cause the need to be denied but expressed in a more extreme way when it is allowed expression.

Previous research on the obese has stated that the obese are overly-dependent and will use passive-aggressive maneuvers to manipulate others to do what they want. It has also been stated that the obese are immature in their dealings with other people. Therefore obese males may be conflicted about expressing dependency needs. They may appear counter-dependent in an attempt to conceal unfulfilled dependency needs, but when they do express these needs they are more apt to express them in a negative way, for example, attempting to get others to care for them through passive-aggressive manipulations. These behaviors are an immature attempt to get others to care for them which probably results in social isolation and rejection.

The weight scale for the Central-Peripheral (Cenper) Score for the Gratitude need was set on significant variance differences between the normal weight and obese male groups. The scale discriminated between the two groups at the lower boundary of the scale. A score below the lower boundary was a negative indicator for membership in the obese group. This excludes the Gratitude need from a more central

placement in the need systems of some of the obese males.

The Gratitude need is the need to be appreciative, thankful, and grateful. The function of the Gratitude need is to reward the sacrifices of others, which promotes the mutual exchange of caring for others. Problems associated with the Gratitude need include the belief that one should be grateful, or that others' expectations compel us to be grateful. This expression of gratitude may become confused with feelings of resentment and inadequacy for "having" to accept help. Another problem associated with the Gratitude need is the belief that the expression of gratitude by others is never unconditional, but is part of a strategy to make us feel obligated and indebted which leads to suspicion of altruism and benevolence. In contrast some people find it hard to be grateful because they feel they are entitled to all gifts and benefits. A third type of problem related to the Gratitude need has to do with faking appreciation to stimulate generosity. This manipulation and phoniness leads to destructive personal relationships.

The less central placement of the Gratitude need in the need systems of some obese males is an indication that the need is seldom closely associated with other needs. The lack of a central placement of the Gratitude need by some obese males may mean that the need is infrequently expressed, and when it is expressed, it may not be a sincere

expression of the need. It has been stated in previous research that the obese may feel an obligation to be grateful for acceptance by others. Ondercin (1984) in her research on anorectic, bulimic, and obese women also found the Gratitude need to be peripheral in the need systems of the obese. She hypothesized that this could mean that the obese are less likely to be grateful to others. Whatever the explanation, it is obvious from Ondercin's (1984) research and the significant results from this study that the expression of the Gratitude need poses some difficulty for the obese.

The Weight Scale Score for the Central-Peripheral (Cenper) Score for the Sex need was set on significant variance differences between the normal weight and obese male groups. The scale discriminated between the two groups at both ends of the scale. A score outside the boundaries on either side of the scale, either moving sex to the center or farther to the periphery, is a positive indicator for membership in the obese group. This indicates that the obese males are having difficulty establishing the location of the Sex need in their motivation systems.

The Sex need is the need to satisfy sexual desires. The function of the need serves the continuation of the species, and is an important factor in family and affiliative relationships. It also serves the function of

deriving sensual pleasure which focuses attention on immediate gratification. In humans, sex is pleasurable and recreational, and may be independent of its biological function. Problems associated with the Sex need include confusion about whether to express sexual impulses or whether to inhibit them. Sexual impotency and frigidity may develop if sex is equated with adequacy of performance. This would inhibit sexual concentration and create anxiety over possible future sexual activity. Also, sexual feelings which are not expressed in a free and spontaneous manner, but in a rational orderly manner may lead to compulsive sexual behavior.

The Sex need for the obese males in this study is either centrally or peripherally located in their motivation systems. Difficulty establishing the location of the Sex need leads to confusion about whether to express sexual impulses or inhibit them. The central location of the Sex need may mean that the need is experienced more frequently, but expressed in unusual (often disguised) ways. It may mean that the need is a constant source of conflict and frustration. The peripheral location of the Sex need may mean that the need is less frequently expressed but when expressed it is expressed in an extreme way.

Previous research on the Sexual expression among the obese suggests that they are in conflict in the expression

of this need. Their large size may make them unattractive to the opposite sex, which may result in infrequent satisfaction of the need. This infrequent satisfaction might lead to feelings of anxiety about adequate performance, which could reinforce the infrequent expression of the need. The obese may also use their large size to avoid sex. If the need is a constant source of conflict and frustration, the expression of the need may be inhibited by their large size.

Conclusions

Conclusions for this study are based on discriminating PIT variables which comprise the female and male personality profiles.

Female and Male Profiles

From the large pool of variables that were tested for significance only 11 variables cross-validated for the 1984 and 1985 female weight groups and only seven variables cross-validated for the 1984 and 1985 male weight groups. On the variables that cross-validated for the female groups only five variables on the weight scales discriminated the obese female groups from the underweight and normal weight groups. For the male cross-validated variables only three variables on the weight scales discriminated the male obese

groups from the underweight and normal weight groups. Therefore, the female and male profiles which are discussed in this section are at best tentative.

Female Profile

Previous research on the obese has identified dependency as a personality trait of the obese. The obese female in this study had problems with the Order need. She may have difficulty in maintaining order. This difficulty could arise from her dependency on others which has prevented her from developing a sense of competence to make decisions and to organize her world. Problems with dependency may also have affected her affiliative relationships. Dependent people overemphasize interpersonal and affiliative relationships. When people overemphasize or become dependent on personal relationships they fail to develop a sense of autonomy which makes their affiliative relationships one-sided and immature. The end result is social isolation. Interpersonal isolation will ultimately affect the ability to play.

The Play need is usually satisfied in interactions with others. According to the results of this study, a disproportionate number of females are not adequately satisfying their needs to play. The large size of the obese women may influence her attitudes toward affiliation and

play. If she feels self-conscious about her size, she will avoid interpersonal 6ituations, which will in turn affect her ability to play. Problems with the Play need may be more salient in interactions with males. The large size of the obese female may make her refrain from engaging in heterosexual play.

Research on weight loss among the obese indicates that most will fail in their attempt to lose weight and of those who do lose weight most will regain it. This cycle of weight loss and gain is a constant effort toward self-improvement. In fact, most attempts by obese females at self-improvement may be connected to weight loss. This overemphasis on correcting mistakes and short-comings (counteraction) is an indication that she is never truly satisfied with herself. This leads to feelings of discouragement. The obese female in this study seems to have problems expressing the Counteraction need in her interactions with males. When trying to establish or maintain relationships with the opposite sex, she may put more emphasis on improving herself. This overemphasis may be her way to compensate for feelings of physical unattractiveness.

According to the profile generated by this study, the obese female is in conflict as to when to defend herself. She is hypersensitive to criticism about her weight, but she

is in conflict over whether to defend herself against criticism or whether to remain silent in an attempt to win acceptance from others. This conflict may take the form of hostile combative behavior, passivity, or a passive-aggressive mixture of both.

From this tentative profile of the obese female, the question arises as to whether the personalities of obese women are more pathological than the personalities of normal weight or underweight women? The limited number of discriminating variables rules out this conclusion. The only conclusion that can be drawn is that some obese women have problems adequately satisfying or expressing the needs for Order, Affiliation, Play, Counteraction and Defendance in their motivation systems.

Male Profile

The obese male, like the obese female, seems to have problems with dependency. This problem is evident in his peripheral placement of the Succorance need in his need system. However, unlike the obese female, the obese male may attempt to conceal his dependency needs. He may appear counter-dependent, and will use passive-aggressive manipulations to get others to care for him.

The obese male has difficulty expressing gratitude toward others. The lack of a central placement of the

Gratitude need in his need system could be an indication of problems associated with interpersonal relationships. The expression of the Gratitude need is necessary to promote mutual caring. It seems that the obese male, either is ungrateful to others, or feels that he must be grateful to be accepted by others. His insincere expression of the Gratitude need may make him resentful toward others and ultimately affects his relationships with others.

The satisfaction of the Sex need by the obese male is problematic, if not pathological. The central and peripheral placement of the Sex need in his need system indicates that he is confused about whether to express sexual desires or whether to inhibit them. The large size of the obese male may make him unattractive to the opposite sex. This probably leads to an infrequent expression of the Sex need. However, when he has the opportunity to satisfy sexual desires, he may feel inadequate due to infrequent expression. The end result may be an avoidance of sexual relationships.

From this tentative profile of the obese male the same question arises. Are the personalities of obese males more pathological than the personalities of underweight and normal weight males? Again, the limited number of discriminating variables rules out this conclusion. The only conclusion that can be drawn is that obese males may be

pathological in satisfying the Sex need and may have problems adequately expressing or satisfying the needs for Succorance and Gratitude.

Recommendations for Future Research

A limitation of this study was the measure of obesity. The statistical measure of 15% above the average weight by height as measured by the 1983 Metropolitan Life Insurance Company weight tables may not have been the most accurate measure of obesity. This limitation may have had consequences for group differences. Non-significant group differences may have been the result of groups that were not clearly defined. Future research should incorporate a more reliable way to measure obesity.

A second limitation was the small number of cross-validated variables between the 1984 weight groups and the 1985 weight groups is an indication that these two groups may have differed on other significant variables that were not measured. In future research possible group differences should be assessed to insure that the groups are indeed similiar. Picture Identification Test (PIT) results from the 1986 entering freshmen class have been collected. T-test results from the 1986 PIT data should be cross-validated against the 1984 and 1985 PIT data. This could determine if there was a significant difference in

group membership between the 1984 and 1985 weight groups.

If the data collected from the 1986 entering freshmen is cross-validated against the 1984 and 1985 PIT data, any discriminating variables should expand the weight scales. Weight scales which are comprised of more discriminating variables may more accurately predict an unknown subject's weight classification.

College students are a homogeneous group. This makes it difficult to generalize the findings from this study to a more general population. A PIT study on obesity should be conducted on a more general population to determine if there is a more distinct obese personality profile.

Finally, previous personality research on the obese, as well as this study has focused on delineating an obese personality profile. The results have been inconclusive. Future research should not only focus on delineating a complete profile, but also on personality traits that appear common to the obese. The identification of these traits could be clinically useful in the psychological treatment of obesity.

APPENDICES

APPENDIX A

Explanation of Picture Identification Test Measures

1. Cenper-A three-dimensional spatial model of an individual's need system shows which needs are located in the center and which are at the periphery. This score reflects how a subject's needs are located differently from the target model. A Cenper score of 0.0 for a need indicates that, with regard to the central-peripheral dimension of the motivation system, the subject's location of the need corresponds to the target location. A positive score indicates a more peripheral location and a negative score reveals a more central location of the need. Overly centralized needs are more frequently activated and experienced and problems may develop because of the unusual location of the need. Overly peripheral needs are considered to be appropriate for expression only on rare occasions and are sometimes perceived as requiring extreme or unusual behavioral expression.

2. Judg-This score measures how the subject's perceptual judgement (Part II, strength of need rating) of the expression of each need correlates with the judgement of others. In general, people with high judgement correlations for needs satisfy their needs more effectively than those with low correlations because they interpret external cues

for the need in much the same way others do.

3. Att-The attitude score for each need indicates whether the subject considers the expression of a need to be generally positive or negative. Whereas a positive attitude encourages expression of a need, a negative attitude inhibits such expression. The higher the Attitude score, the more negative is the attitude toward the need.

4. DeVatt-The Deviation Attitude Score is computed by subtracting the Target Group standardized Need Attitude Score from the subject's standardized Need Attitude Score. The DeVatt Score for a particular need is positive if the need is ranked more positively in the subject's set of Need Attitude Scores than it is ranked in the Target Group set of Need Attitude Scores. A negative DeVatt Score indicates a lower or more negative attitude ranking by the subject than by the target Group. A DeVatt Score <-.100 or > 1.00 indicates a significant deviation from the Target Model.

5. Difdvm, Difdvf-The Differential Deviation Score for Male Pictures and the Differential Deviation Score for Female Pictures indicates whether a subject is in good agreement with others in their beliefs about how males and females express needs. A score of 13.0 or higher indicates unrealistic beliefs about expression of a particular need with regard to the particular sex indicated (Difdvm for males; Difdvf for females). A score of 5.0 or less

indicates realistic beliefs about expression of a particular need for the indicated sex. A subject's Difdvm and Difdvf Scores are based on deviations from the Target Group need associations.

7. Prob-The Problem Score, which is computed for each need, is composed of weighted contributions from four main PIT scores (Judg, Cenper, Adsum and Ego Scores) and is the best indicator of how well each need fits into the overall pattern of a person's motivation system. The higher the Problem Score for a need, the greater the possibility of conflicts and frustrations related to the need.

8. Confu-Although each of the three target model dimensions (Combative, Personal, and Competitive) have independent structures, some individuals have a dimension which is a mixture of two target dimensions. If this interdimension confusion score is significant (i.e. .40 or higher), it reduces the distinct alternative modes of action for meeting one's needs, thereby limiting the person's flexibility and effectiveness.

9. Dimcor-The Dimension Attitude Correlation is derived by correlating the attitude scores for the 22 needs with the target need locations for each dimensions. Dimension Attitude Correlations which differ significantly from the target indicate attitudes which may compromise a person's effectiveness when operating in that dimension.

The target group has a moderately negative attitude toward the Combative dimension, a moderately positive attitude toward the Personal dimension, and a low, but positive Competitive dimension attitude correlation.

10. Sumsa-The Sum of the Absolute Deviation Dyads for Each Need. A Dyad Association Deviation Score is the difference between the target standarized Dyad Association Score and the subject's corresponding standardized Dyad Association Score. The difference is computed so that a negative Dyad Association Deviation Score indicates that the subject associated the pair of needs in the dyad more closely than did the average Target Group subject. A positive Dyad Association Deviation Score indicates that the subject associated the pair of needs in the dyad more distantly than did the average Target Group subject.

The sum of the absolute Dyad Association Deviation Scores (Sumsa) for a particular need provides a measure of the subject's overall association deviations (from the target model) for that need. A Sumsa score of 1.00 or higher for a particular need indicates unusual and perhaps unrealistic beliefs about how the need is expressed and satisfied.

11. Sumsm, Sumsf-The Sum of the Absolute Deviation Dyads for each need based on Male Pictures and the Sum of the Absolute Deviation Dyads for each need based on Female

Pictures provides a measure of a subject's overall male and female picture association deviations for that need. The Dyad Association Deviation Score is computed for each pair of needs based on the male picture ratings and for each pair of needs based on the female picture ratings. The Sumsm and the Sumsf indicate differences in subjects' beliefs about how men and women express needs. Extreme association deviations are attributable primarily to either male picture associations or to female picture associations. Such results suggest that the subject is more unrealistic in her or his beliefs about the sex with the larger deviation scores.

12. Val-The Need Valence Score is the sum of the 12 ratings for each need on the 1-5 rating scale for strength of expression of a need (PIT, Part II). The sum of the 12 ratings can vary from 12 to 60, with a strong Valence Score (low end of the Val scale) for a particular need indicating that the subject perceives the need strongly in most facial expressions and that this may be a projection of the subject's oversensitivity and concern about the need. A low Valence Score (high end of the Val scale) for a need indicates that the subject denies the expression of the need in others and may thus be repressing concerns about the need.

13. Wgtpc-The first three Wgtpc scores indicate the

Combative, Personal, and Competitive dimension weights, respectively. The fourth score is the Need Differentiation Sum. The Dimension weights indicate the emphasis given to each dimension in the individual's motivation system. For most people, the Combative dimension weight is about 40% and the Personal and Competive dimensions are approximately 30%. Overweighted or underweighted dimensions may create imbalances in the motivation system which can cause personality problems (The higher the dimension weight, the greater the emphasis on that dimension). The Need Differentiation Sum is calculated by adding the absolute scale locations of all 22 needs in all three dimensions. The larger the score, the more "space" the need distribution takes up in the three dimensions. The higher the Need Differentiation Sum, the greater the ability to analyze and organize motives to maximize need satisfaction.

APPENDIX B

Picture Identification Test Need Definitions

(ABA) Abasement: The need to admit faults and weaknesses.

(ACH) Achievement: The need to work hard and to attain goals.

(AFF) Affiliation: The need to be friendly and sociable.

(AGG) Aggression: The need to be forceful and criticize or attack others.

(AUT) Autonomy: The need to be free, independent, and uninhibited.

(BLA) Blame Avoidance: The need to avoid doing things which might arouse criticism or disapproval.

(CNT) Counteraction: The need to improve oneself and correct mistakes and shortcomings.

(DFD) Defendance: The need to stand up for one's rights and defend oneself.

(DEF) Deference: The need to follow the advice and guidance of those with experience and authority.

(DOM) Dominance: The need to assert leadership and act in a commanding and persuasive way.

(EXH) Exhibition: The need to express ideas and exhibit one's talents and abilities.

(GRA) Gratitude: The need to be appreciative, thankful, and grateful.

(HAR) Harm Avoidance: The need to avoid harm and danger.

(INF) Inferiority Avoidance: The need to avoid failure, inadequacy, and inferiority.

(NUR) Nurturance: The need to give aid and comfort to others.

(ORD) Order: The need to systematize, organize, and put things in order.

(PLA) Play: The need to play, have fun, and enjoy oneself.

(REJ) Rejection: The need to resist pressures to do things one does not wish to do.

(SEN) Sentience: The need to appreciate the beauty and harmony of one's surroundings.

(SEX) Sex: The need to satisfy sexual desires.

(Suc) Succorance: The need to receive help, support and assistance.

(Und) Understanding: The need to learn, understand, and find the meaning of things

APPENDIX C

Standard Weight Tables for Female Groups

height	Average weight by height	15% overweight	15% underweight
4' 9"	113.5	130.52	96.47
4' 10"	115.5	132.82	98.17
4' 11"	117.5	135.12	99.87
5' 0"	120	138	102
5" 1"	122.5	140.87	104.12
5' 2"	126	144.9	107.1
5' 3"	129.5	148.92	110.7
5' 4"	133	152.95	113.05
5' 5"	136.5	156.97	116.02
5' 6"	140	161	119
5' 7"	143.5	165.02	121.97
5' 8"	146.5	168.47	124.52
5' 9"	149.5	171.92	127.07
5' 10"	152.5	175.37	129.62
5' 11"	155.5	178.82	132.17

Standard Weight Tables for Male Groups

height	Average weight by height	15% overweight	15% underweight
5' 1"	134	154.1	113.9
5' 2"	136.5	156.97	116.02
5' 3"	139	159.85	118.15
5' 4"	142	163.3	120.7
5' 5"	145	166.75	123.25
5' 6"	148	170.2	125.8
5' 7"	151	173.65	128.35
5' 8"	154	177.1	130.9
5' 9"	157	180.55	133.45
5' 10"	160	184	136
5' 11"	163.5	188.02	138.97
6' 0"	167	192.05	141.95
6' 1"	171	196.65	145.35
6' 2"	175	201.25	148.75
6' 3"	179.5	206.42	152.57

Standard Weight Range for

Normal Weight Female and Male Groups

Female		Male	
height	Weight Range	height	Weight Range
4' 9"	102.5-112.5	5' 1"	129.0-139.0
4' 10"	110.5-120.5	5' 2"	131.5-141.5
4' 11"	112.5-122.5	5' 3"	134.0-144.0
5' 0"	115.0-125.0	5' 4"	137.0-147.0
5' 1"	117.5-127.5	5' 5"	140.0-150.0
5' 2"	121.0-131.0	5' 6"	143.0-153.0
5' 3"	124.5-134.5	5' 7"	146.0-156.0
5' 4"	128.0-138.0	5' 8"	149.0-159.0
5' 5"	131.5-141.5	5' 9"	152.0-162.0
5' 6"	135.0-145.0	5' 10"	155.0-165.0
5' 7"	138.5-148.5	5' 11"	158.5-168.5
5' 8"	141.5-151.5	6' 0"	162.0-172.0
5' 9"	144.5-154.5	6' 1"	166.0-176.0
5' 10"	147.5-157.5	6' 2"	170.0-180.0
5' 11"	150.5-160.5	6' 3"	174.5-184.5
6' 0"	153.5-163.5		
6' 1"	156.5-166.5		

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ABSTRACT

AN ANALYSIS OF THE PERSONAL NEED SYSTEMS

OF OBESE COLLEGE FRESHMEN

Lila Annaloro, Ed.D.

College of William and Mary, November, 1986

Chairman: Kevin Geoffroy, Ed.D

This study compared the personal need systems of obese, underweight, and normal weight college students. The Picture Identification Test (PIT) was mailed to the 1984 and 1985 entering freshmen classes at the College of William and Mary. From the 1984 class, 576 students completed the Picture Identification Test (PIT), and from the 1985 class, 505 students completed the PIT. The PIT data from those subjects who met the classification for the weight groups were included in the study. The criteria for the weight groups were set from the 1983 Metropolitan Life Insurance Company weight tables. Height and weight measurements for group classification were taken from students' physical exams that were sent to the college as a requirement for enrollment. From the 1984 freshmen class, 25 females and 27 males were classified as obese; 49 females and 45 males were classified as normal weight and 74 females and 38 males were classified as underweight. From the 1985 freshmen class, 18 females and 23 males were classified as obese; 45

females and 59 males were classified as normal weight and 51 females and 23 males were classified as underweight.

T-tests were performed on 24 sets of PIT measures. Results from the 1984 PIT data were cross-validated against the results from the 1985 PIT data. The data was cross-validated to insure that significant results found for one year of data remained constant for the second year of data. Eleven PIT variables cross-validated for the 1984 and 1985 female weight groups and seven PIT variables cross-validated for the 1984 and 1985 male weight groups. A weight scale was developed from the significant mean and/or variance differences for PIT measures which discriminated ($p<.05$) between the obese and non-obese groups. The scales were constructed to predict weight group classification for the subjects and to delineate a female and male need system profile.

The female and male scales successfully predicted subject classification at a better than chance level ($p<.01$). The Order, Counteraction, Play, Affiliation, and Defendance needs comprised the obese female profile. The needs of Succorance, Gratitude and Sex comprised the obese male profile.